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Alan B. Horowitz

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TERMINATING THE "PASSIVE" PARADOX: A PROPOSAL FOR FEDERAL REGULATION OF ENVIRONMENTAL TOBACCO SMOKE

ALAN B. HOROWITZ*

> In the case of the smoker himself, it could plausibly . . . be argued that the risks of smoking were somehow voluntarily incurred. In the case of the passive smoker, that argument would be far harder to sustain. Passive smokers do not themselves light up. They merely breathe. You can voluntarily choose to do something only if you can, realistically, choose not to do it; and no one can choose not to breathe.[1]

INTRODUCTION

Within our federal scheme, the Congress is empowered to legislate for the welfare of society; regulatory agencies have the responsibility to implement and elucidate the policy directives of these congressional enactments.[2] The rudimentary directive of one of these regulatory agencies, the Environmental Protection Agency (EPA), is to diminish and, if possible, eliminate the human health and ecological risks posed by the by-products of our complex society.[3] The task, however, is not clearly or even logically delineated.

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* I would like to thank my mother, Lois Ann Horowitz, whose passionate and zealous advocacy for the cause inspired and fueled this Comment.

1. R. GOODIN, NO SMOKING, THE ETHICAL ISSUES 69 (1989).

2. *See* C. KOCH, JR., ADMINISTRATIVE LAW AND PRACTICE § 1.22, at 39 (1985) (explaining that main source of administrative agency authority is derived from legislative branch). The limits of agency power are found within its enabling statutes. *Id.*; *see also* Federal Administrative Procedure Act, 5 U.S.C. §§ 551-706 (1988) (establishing federal agency adjudicative and rule-making procedure and authority).

3. UNITED STATES ENVTL. PROTECTION AGENCY, REDUCING RISK: SETTING PRIORITIES AND STRATEGIES FOR ENVIRONMENTAL PROTECTION 11 (1990) [hereinafter REDUCING RISK] (identifying methods for society to decrease consumption, lessen environmental risks, and become more energy-efficient). The EPA has been described as a reactive agency, designed with minimal flexibility to respond to specific environmental concerns pursuant to congressional enactments. *Id.* at 3. As a result, many of the EPA's priorities do not reflect objective

Regulatory priorities are dictated by often conflicting political, economic, and scientific concerns that often obfuscate the ultimate objectives of the health-based regulatory agency.[4] The regulation of environmental risks emanates from an eclectic process that seeks to quantify various threats to human health and survival.[5] That process, however, should not obscure risk realities. Legislative and regulatory risk abatement schemes should ensure that regulatory efforts parallel risk realities and that similar risks are regulated analogously. EPA, however, recently discovered that its priorities, determined in large part by its federal enabling statutes, are often inconsistent with scientifically objective health risk conditions.[6] This Comment examines one example of this regulatory paradox,

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evaluations of the most serious environmental risks, but instead emanate largely from legislative responses to societal demand. *Id.* at 12. Consequently, risks are regulated on an ad hoc basis; little effort is expended to compare and contrast risks across different environmental mediums so as to direct resources to the most significant risks. *Id.* at 3.

4. *See generally* 1 UNITED STATES ENVTL PROTECTION AGENCY, UNFINISHED BUSINESS: A COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PROBLEMS, OVERVIEW REPORT 28-42 (1987) [hereinafter UNFINISHED BUSINESS] (identifying and comparing relative risks of various environmental dangers with public perception and relative degree of agency activity). The report identifies indoor air pollution, of which Environmental Tobacco Smoke (ETS) is a major component, as a high risk problem with low agency response. *Id.* at 62.

EPA's Science Advisory Board (SAB) responded to UNFINISHED BUSINESS in late 1990. *See* REDUCING RISK, *supra* note 3, at 5-6 (describing goal of UNFINISHED BUSINESS and SAB's evaluation of its findings). The SAB agreed with the findings presented in UNFINISHED BUSINESS, recognizing that the EPA's regulatory priorities, largely the product of public opinion, are inconsistent with real environmental risk. *Id.* at 12. This dichotomy, as SAB described it, is largely responsible for the regulatory paradoxes that exist today. *Id.* The SAB issued ten recommendations designed to help reconcile EPA's mission with risk reality:

> (1) EPA should target its environmental protection efforts on the basis of opportunities for the greatest risk reduction; (2) EPA should attach as much importance to reducing ecological risk as it does to reducing human health risk; (3) EPA should improve the data and analytical methodologies that support the assessment, comparison, and reduction of different environmental risks; (4) EPA should reflect risk-based priorities in its strategic planning processes; (5) EPA should reflect risk-based priorities in its budget process; (6) EPA—and the nation as a whole—should make greater use of all available tools to reduce risk; (7) EPA should emphasize pollution prevention as the preferred option for reducing risk; (8) EPA should increase its efforts to integrate environmental considerations into broader aspects of public policy in as fundamental a manner as are economic concerns; (9) EPA should work to improve public understanding of environmental risks and train a professional workforce to help reduce them; and (10) EPA should develop improved analytical methods to value natural resources and to account for long-term environmental effects in its economic analysis.

Id. at 6. EPA's budget allotted to address indoor air quality concerns such as ETS, radon, asbestos, and lead comprises $11 million of a $4 billion overall budget. *Bush Administration Opposes Indoor Air Quality Legislation*, Daily Rep. for Execs. (BNA) No. 70, at A-17 (Apr. 11, 1991).

5. *See* NATIONAL RESEARCH COUNCIL, RISK ASSESSMENT IN THE FEDERAL GOVERNMENT: MANAGING THE PROCESS 18-37 (1983) [hereinafter MANAGING THE PROCESS] (outlining risk assessment and risk management processes within federal agencies and identifying divergent and competing factors that dictate risk management).

6. *See* UNFINISHED BUSINESS, *supra* note 4, at 95 (identifying indoor air pollution as area of "high risk/low EPA effort" where risks and EPA's priorities diverge). The study identified the divergence between public perception of risk and scientific reality as a major source of this

air pollution from Environmental Tobacco Smoke (ETS). Many environmental health risks of similar or even lesser magnitude have priority in the federal policy agenda because they stand at the forefront of public concern and do not engender political friction.[7] ETS, however, perhaps the third-leading cause of preventable death,[8] remains unregulated on a national scale.[9]

Environmental Tobacco Smoke is composed of exhaled tobacco smoke, known as secondhand smoke, and smoke emitted from burning tobacco products, known as sidestream smoke.[10] EPA has concluded that ETS causes lung cancer in nonsmokers and increases the risk of respiratory illness in children, who are especially vulnera-

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disparity. *Id.* at 95-97; *see also* REDUCING RISK, *supra* note 3, at 14 (identifying indoor air pollution as area warranting "major risk reduction efforts").

7. *See* UNFINISHED BUSINESS, *supra* note 4, at 95-100 (recognizing that EPA priorities and statutory authorities regulating environmental concerns are more reflective of public risk perceptions than actual health risks). Examples include air pollutants such as sulfur dioxide and total suspended particulates which, while vigorously regulated by the Clean Air Act, 42 U.S.C. § 7409 (1988), *amended by* Clean Air Act Amendments of 1990, 42 U.S.C.A. § 7409 (Supp. 1991), were ranked 22 out of 26 in relative cancer risk. *Id.* at 32. The cancer incidence from pesticide application are estimated to be approximately 100 cases annually, and from active hazardous waste sites less than 100 cases annually. *Id.* at 30.

8. Glantz & Parmley, *Passive Smoking and Heart Disease: Epidemiology, Physiology, and Biochemistry*, 83 CIRCULATION 1, 10 (1991) (announcing results of study linking ETS with coronary artery disease and ranking passive smoking third in preventable causes behind first-ranked active smoking and second-ranked alcohol).

On April 18, 1991, an independent science advisory board of the EPA recommended that EPA Administrator William Reilly adopt two ETS risk assessment reports concluding that ETS is responsible for approximately 3800 lung cancer deaths annually, and therefore classify ETS as a Class A carcinogen, a substance known to cause cancer in humans. *EPA Board Says Tobacco Smoke a Hazard That Should Be Regulated in the Workplace*, Daily Rep. for Execs. (BNA) No. 81, at A-8 (Apr. 26, 1991).

9. The potential for at least parochial regulation of ETS under present law exists. The Occupational Safety and Health Act of 1970 assigns OSHA the duty of ensuring that "each employer . . . furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." UNITED STATES DEP'T OF HEALTH & HUMAN SERVS., REDUCING THE HEALTH CONSEQUENCES OF SMOKING: 25 YEARS OF PROGRESS. A REPORT OF THE SURGEON GEN. 610, 613 (1989) [hereinafter 25 YEARS OF PROGRESS]. While OSHA sets standards for 24 airborne substances found in ETS, it fails to regulate ETS directly. *Id.* Broader authority for regulation may exist under section 112 of the Clean Air Act. *See* Clean Air Act Amendments of 1990, 42 U.S.C.A. § 7412(f)(2)(A) (Supp. 1991) (requiring EPA to establish national emission standards for hazardous air pollutants at level which "provides an ample margin of safety to protect the public health"). Hazardous air pollutants are defined under the Clean Air Act Amendments as those that are specifically delineated by Congress as such or those which the Administrator of the EPA determines "may present, through inhalation or other routes of exposure, a threat of adverse health effects (including . . . substances which are known to be, or may reasonably be anticipated to be, carcinogenic . . .)." 42 U.S.C.A. § 7412(a)(6), (b)(2) (Supp. 1991).

10. UNITED STATES ENVTL. PROTECTION AGENCY, INDOOR AIR FACTS NO. 5: ENVIRONMENTAL TOBACCO SMOKE 1-3 (1989) [hereinafter INDOOR AIR FACTS NO. 5]. ETS contains more than 4700 chemical compounds including carbon monoxide, nicotine, nitrogen oxides, formaldehyde, benzene, and arsenic. *Id.* These compounds are found to be highly toxic in animal studies and are considered and treated as hazardous when emitted into the outdoor environment by hazardous waste and chemical plants. *Id.*

ble to secondhand smoke.[11] In fact, 53,000 annual deaths in the United States may be attributable to ETS.[12] While the tobacco industry disputes the scientific evidence,[13] the findings strongly indi-

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11. *See Panel Calls for Alert on Risks of Passive Smoke*, L.A. Times, Apr. 19, 1991 at A4, col. 1 (discussing EPA science advisory board's endorsement of ETS risk assessments suggesting ETS to be known cause of lung cancer). This finding by 16 independent science advisors to EPA followed an EPA risk assessment analysis that designated passive smoke as a "known human carcinogen," or "class A" human health threat, after concluding that ETS is responsible for an estimated 3800 lung cancer deaths annually, and is the third most common cause of lung cancer mortality after radon and direct smoking. N.Y. Times, Dec. 6, 1990, at A24, col. 1. The report also associated ETS with "bronchitis, pneumonia, wheezing, and middle-ear disease in children and that children of mothers who smoke have impaired lung growth and development." *Id.* If labeled as a "class A" carcinogen, ETS would join asbestos, radon, and benzene on a list of 15 such health risks. *See also* USA Today, Dec. 6, 1990, at A1, col. 2. The chairman of the EPA's science advisory panel, Dr. Morton, said "it seemed to me that there is a consensus that would make the case [that ETS is a known cause of cancer to nonsmokers]." N.Y. Times, Dec. 6, 1990, at A24, col. 1; *see generally* INDOOR AIR FACTS No. 5, *supra* note 10, at 1-3 (presenting general information on the nature and impact of ETS); UNITED STATES DEP'T OF HEALTH & HUMAN SERVS., THE HEALTH CONSEQUENCES OF INVOLUNTARY SMOKING. A REPORT OF THE SURGEON GEN. 7 (1986) [hereinafter INVOLUNTARY SMOKING] (examining scientific evidence of health effects of ETS and concluding that involuntary smoking is cause of lung cancer in otherwise healthy nonsmokers and respiratory illness in children of smoking parents); NATIONAL RESEARCH COUNCIL, ENVIRONMENTAL TOBACCO SMOKE: MEASURING EXPOSURES AND ASSESSING HEALTH EFFECTS 9-12 (1986) [hereinafter NATIONAL RESEARCH COUNCIL] (estimating that risk of lung cancer is roughly 30% higher for nonsmoking spouses of smokers than for nonsmoking spouses of nonsmokers and noting that children of smokers have 20-80% higher chance of developing negative respiratory symptoms than children of nonsmokers); N.Y. Times, Nov. 25, 1990, at 12CN, col. 3 (discussing medical findings showing immature lung development of children increases susceptibility to ETS); Janerich, Thompson, Varela, Greenwald, Chorost, Tucci, Zaman, Melamed, Kiely, & McKneally, *Lung Cancer and Exposure to Tobacco Smoke in the Household*, 323 NEW ENG. J. OF MED. 632, 633-34 (1990) (reporting results of study finding that household exposure to heavy smoking doubles risk of lung cancer in children).

In June, 1991, the United States Department of Health and Human Services became the first federal agency to acknowledge the health effects of ETS on workers. *See generally* NATIONAL INST. FOR OCCUPATIONAL SAFETY AND HEALTH, ENVIRONMENTAL TOBACCO SMOKE IN THE WORKPLACE, Current Intelligence Bulletin No. 54, at 12 (June 1991) [hereinafter ENVIRONMENTAL TOBACCO SMOKE IN THE WORKPLACE]. In an official release, the National Institute for Occupational Safety and Health (NIOSH) stated that "[w]orkers should not be involuntarily exposed to tobacco smoke." *Id.* Thus, NIOSH concluded, ETS exposure should be completely eliminated in the workplace. *Id.* at 13. A NIOSH representative stated that "it is incontrovertible that [ETS] is carcinogenic." Daily Rep. for Execs. (BNA) No. 139, at A15 (July 19, 1991).

12. N.Y. Times, May 30, 1991, at A22, col. 1 (discussing draft of EPA-sponsored report concluding that ETS kills 53,000 people annually, 37,000 of which die from heart disease). Dr. Stanton Glantz asserts that the heart disease risk from ETS is greater than lung cancer. *Id.* at 1. Direct smoking caused an estimated 315,000 deaths in 1984. 25 YEARS OF PROGRESS, *supra* note 9, at 131. An estimated 100,000 deaths a year are alcohol related. U.S.A. Today, Apr. 23, 1991, at A11, col. 3.

13. In response to the recent EPA scientific advisory findings recommending that ETS be classified as a Class A carcinogen, a Tobacco Institute spokesman, Walker Merryman, stated that "the [board's] conclusions on the risk assessment can only be described as irrational." *Job Safety, EPA Board Says Tobacco Smoke a Hazard That Should Be Regulated in the Workplace*, Daily Rep. for Execs. (BNA) No. 81, at A-8 (Apr. 26, 1991). Merryman further indicated that the EPA has ignored three studies that weaken the link between ETS and lung cancer. *Id.*; *see Passive Smoke, Active Lobby; Tobacco Interests Set Sights on EPA Staff Study*, Legal Times, Aug. 6, 1990, at 2 (discussing Tobacco Institute's efforts to discredit EPA's findings and public-relations campaign denying any link between ETS and cancer headed by Philip Morris, nation's largest tobacco company); LAYARD, *Environmental Tobacco Smoke and Cancer: The Epidemiologic*

cate that the national legislative and regulatory bodies empowered to protect the public from environmental health risks have clearly ignored a serious and pervasive health hazard.

While a multitude of risks and effects of passive smoke are cited and hypothesized, the foundation and premise of this Comment will focus on the lung cancer risk of ETS.[14] The Comment discusses the absence of national uniform ETS regulation and consequently proposes a solution to assimilate the ETS health risk with current environmental risk protection schemes. Part I examines the environmental risk regulation process, recognizing society's role in the quantification of risks and the paradoxical dichotomy between risk perception and risk reality. Part II challenges these assumptions and the federal government's response to them. It attempts to elucidate a concomitant paradox: the failure of Congress and federal agencies, particularly EPA, to protect society from certain risks posing health threats similar or greater to those actively controlled. Part III analyzes one such regulatory paradox, the health threat posed by ETS, and compares this risk with other currently regulated risks. Part IV considers potential avenues for terminating these interrelated paradoxes. The Comment concludes with a recommendation that only through both federal attempts to harmonize public risk perception with risk reality and an amendment to existing air pollution legislation can the ETS risk be mitigated and a more focused path towards a reconciliation of risk reality and risk control be paved.

I. CONFRONTING ENVIRONMENTAL RISK

A. The Quantification of Risk

The assessment of cancer risks is criticized as an amorphous and imprecise process,[15] yet carcinogenic risk assessments remain the

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Evidence, in ENVIRONMENTAL TOBACCO SMOKE: PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM—AT MCGILL UNIVERSITY 99-112 (D. Ecobichon & J. Wu, eds. 1990) [hereinafter LAYARD, *Environmental Tobacco Smoke and Cancer*) (setting forth data from scientific symposium funded by tobacco industry showing that link between ETS and lung cancer is weak and inconsistent).

14. *See* INVOLUNTARY SMOKING, *supra* note 11, at 8-11 (establishing substantial link between involuntary smoking and lung cancer deaths, respiratory disease, and cardiovascular disease). The suspected effects of ETS exposure include common irritation of the eyes, nose and throat, acute and chronic respiratory disease—especially in children of smokers, cardiovascular disease, and lung cancer. *Id.* For a clear delineation of the suspected health effects of ETS exposure, see *id.* at 13-14; *see also* Reynolds, *Extinguishing the Brushfires: Legal Limits on the Smoking of Tobacco*, 53 U. CIN. L. REV. 435, 438 (1984) (discussing physiological and emotional impact of passive smoke on nonsmokers).

15. *See* REDUCING RISK, *supra* note 3, at 18 (encouraging EPA to improve its risk assessment methodology); *Thumbs on the Scales of Risk?*, Wash. Times, Mar. 12, 1991, at G3, col. 3 (arguing that assessment, regulation, and communication of environmental risks are inherently biased and skewed); *see also* Cross, *Beyond Benzene: Establishing Principles for a Significance*

guideposts for federal environmental regulatory activity.[16] While political, social, and economic realities inevitably preclude elimination of all risks, thresholds of acceptability have been identified.[17] Society generally considers annual per capita fatal risks greater than one in one-hundred (10^{-2}) to be clearly unacceptable.[18] Annual per capita risks less than one in one-million (10^{-6}) per year are generally tacitly accepted and considered below the "societal threshold of risk aversion."[19] For risks between these two extremes, however, regulatory agencies engage in risk assessment and cost-benefit analysis to determine the social value of regulation.[20] Although EPA's risk-

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Threshold on Regulatable Risks of Cancer, 35 EMORY L.J. 1, 2 n.8 (1986) (assessing imprecision in carcinogenic risk assessments). *But see Significant Risk Decisions In Federal Regulatory Agencies*, ENVTL. REP. 1, 1 (Winter 1987) [hereinafter *Significant Risk Decisions*] (stating that even given uncertainties of risk assessment process, it is "most powerful device available" to measure health dangers and action needed for their abatement). The Clean Air Act Amendments of 1990 recognize that improvements in the assessment of human health risk may be necessary, requiring the Administrator of EPA and the Surgeon General to study and report on risk assessment methodology by November 15, 1996. 42 U.S.C.A. § 7412(f)(1) (Supp. 1991).

16. *See* Guidelines for Carcinogen Risk Assessment, 51 Fed. Reg. 33,992 (1986) (promulgating guide for Agency evaluation of carcinogenic risks pursuant to EPA enabling statutes). The guidelines are intended for use in assessing risks subject to regulation under EPA enabling statutes. *Id.* The guidelines adopt a "weight of the evidence" approach for classifying risks. *Id.* at 33,996. Under this approach, carcinogenic data for suspected substances is evaluated and used to place suspected carcinogens in risk classes, delineated from "Group A," "Carcinogenic to Humans" to "Group E," "Evidence of Non-Carcinogenicity for Humans." *Id.* A substance is classified as a Group A carcinogen "when there is sufficient evidence from epidemiological studies to support a causal association between exposure to the agents and cancer." *Id.* at 34,000. *See generally* MANAGING THE PROCESS, *supra* note 5, at 11-14, 18-19 (discussing uncertainty in field of risk assessment and describing risk assessment process).

17. Repace, *Risks of Passive Smoking*, in TO BREATHE FREELY: RISK, CONSENT, AND AIR 22 (M. Gibson ed. 1985) [hereinafter Repace, *Risks of Passive Smoking*]; *see* 45 Fed. Reg. 5235 (1980) (reporting testimony of physicist Dr. Richard Wilson who recommended Federal regulation of fatal occupational risks between 10^{-2} and 10^{-5} annually).

18. *Id.*

19. *Id.* at 22-23; *see* 54 Fed. Reg. 38,044-45 (1989) (to be codified at 40 C.F.R. pt. 61) (setting forth risk assessment guidelines for regulation of toxic air pollutants under section 112 of Clean Air Act, 42 U.S.C. § 7412 (1988)). These guidelines seek to provide protection from hazardous air pollutants by "(1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million (10^{-6}) and (2) limiting to no higher than approximately one in ten thousand (10^{-4}) the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." *Id.*; *see also* Cross, *supra* note 15, at 12-46 (comparing application of significant risk ratios applied by various federal agencies including EPA, Consumer Products Safety Commission, and OSHA). In assessing agency risk decisionmaking, Cross concludes that the EPA considers a risk of one in one hundred for a small population, or one in ten thousand for a group of hundreds of thousands as acceptable risk thresholds. *Id.* at 33. The setting associated with risk exposure, in particular with regard to occupational choices, is considered an important factor in the establishment of acceptable risk thresholds. *Id.* at 48-49.

20. *See* Huber, *The Old-New Division in Risk Regulation*, 69 VA. L. REV. 1025, 1051-54 (1983) (discussing factors such as administrative complexity, public perception, and scientific clarity of risks as significant in determining acceptable levels of risk); Graham, *The Failure of Agency-Forcing: The Regulation of Airborne Carcinogens Under Section 112 of the Clean Air Act*, 1985 DUKE L.J. 100, 130-37 (identifying realities of cost-benefit concerns as inhibitive of zero-emission standards in regulation of hazardous air pollutants pursuant to section 112 of Clean Air Act, 42 U.S.C. § 7412 (1988)).

regulating mandates are inconsistent in nature and scope[21] and often result in disparate and nonuniform risk regulation,[22] EPA generally attempts to regulate cancer risks of premature death which are greater than an order of 1×10^{-6} per year or, calculated over an average human lifetime.[23]

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21. Scroggia, *Assessment of Toxic Risk is Key to Agency Regs*, Legal Times, Nov. 12, 1984, at 22 (noting that EPA imposes regulations inconsistent with objective of protecting human health). High risks may remain unregulated due to the cost of control and relatively smaller risks may receive greater control due to economic and technical feasibility. *Id.*

22. *See* Safe Drinking Water Act, 42 U.S.C. § 300g-1(b)(3)(A) (1988) (requiring EPA to issue maximum contaminant level goals (MCLGs) for any contaminant that "may have any adverse effect on the health of persons and which [are] known or anticipated to occur in public water systems"). MCLG standards are to ensure that "no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety." *Id.* § 300g-1(b)(4). In determining the level of an MCLG for contaminants where there exists "strong evidence [of carcinogenicity via ingestion] considering weight of evidence, pharmacokinetics, and exposure," the EPA determined that only a zero-threshold level complies with the statutory mandate. 56 Fed. Reg. 3532 (1991) (to be codified at 40 C.F.R. pts. 141, 142, and 143). The EPA stated, however, that MCLGs are not enforceable standards, but "goals based solely on health factors" and do not necessarily have to be measurable, affordable, or achievable. *Id.* at 3534. The Safe Drinking Water Act, however, does require that enforceable "maximum contaminant levels" (MCLs) be set for contaminants as close to the MCLG as is "feasible." 42 U.S.C. § 300g-1(b)(4) (1988). The EPA may consider economic, technological, and other feasibility factors in setting MCLs. 56 Fed. Reg. 3556. The EPA policy is to set MCLs for known carcinogens within a risk range of 10^{-4} to 10^{-6}; risks beyond this range are considered "not significant" and "safe and protective of public health." *Id.* at 3547.

See also Clean Water Act, 33 U.S.C. § 1314(a) (1988) (authorizing EPA to develop and publish *nonenforceable* water quality criteria (WQC)). WQC must reflect "the latest scientific knowledge" on the effects of pollutants on public health, aquatic life, and recreation. *Id.* As nonenforceable guidelines, WQC have no regulatory impact and do not reflect economic or technological feasibility considerations. 45 Fed. Reg. 79,319 (1980). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires all pesticides sold and distributed in the United States to be registered in accordance with standards to ensure that pesticides do not cause "unreasonable adverse effects on the environment." 7 U.S.C. § 136(c)(5) (1988). The Federal Food Drug and Cosmetic Act (FFDCA) defines when a food is considered adulterated. 21 U.S.C. § 342(a) (1988). The EPA may consider the necessity for the production of an adequate, wholesome, and economic food supply in determining appropriate standards. 53 Fed. Reg. 41,104, 41,106 (1988). The EPA interprets the statutory language to allow for performance of risk-benefit analysis in setting carcinogen tolerances. 53 Fed. Reg. at 41,104. Under section 409 of the FFDCA, 21 U.S.C. § 342(a) (1988), the EPA is authorized to issue food additive regulations if it finds that the use of the pesticide will be "safe" under the "general safety clause." 21 U.S.C. § 348(c)(3) (1988). The EPA interprets this clause to allow cost-benefit analysis when issuing food additive regulations. 53 Fed. Reg. at 41,106. The Delaney Clause, however, states that a food additive will not be considered "safe" if it causes cancer. 21 U.S.C. § 348(c)(3) (1988). Although a plain reading of the language would mandate a zero-risk standard, the EPA interpreted the Delaney Clause as containing an exception for pesticides posing a *de minimis* risk. 53 Fed. Reg. 41,107, 41,112 (1988). Although *de minimis* risks have not been defined, in practice the EPA has not applied the Delaney Clause to additives posing lifetime cancer risks of premature death of 1×10^{-7} to 1×10^{-9}. 53 Fed. Reg. at 41,112.

23. *See* Guidelines for Carcinogen Risk Assessment, 51 Fed. Reg. 33,998 (1986) (examining methods for calculating human cancer risk). Risks are characterized as a measure of excess lifetime cancer risk, or the excess number of cancers caused each year in the exposed population. *Id.* at 33,998-99; *supra* note 22 (reviewing established risk thresholds under various EPA enabling statutes); *infra* notes 72-83 (examining risk regulation policy under Clean Air Act).

B. The Nature of Risk Assessment

The magnitude and acceptability of human health risks are often subjectively evaluated by society. As a result, regulatory responses often reflect these subjective assessments rather than objective scientific reality.[24] It is said that "[e]nvironmental regulation is about risk. Public perception of risk relates closely to catastrophe and crisis, and . . . [the people's representatives in government] reflect that perception."[25] Risks that ensue from purely personal and voluntary conduct, or are considered beyond the ability of societies or individuals to control, are often accepted as unavoidable.[26] These voluntary or natural risks, while potentially severe, are often dismissed and accepted as the costs associated with the by-products of life.[27] For other risks, however, society perceives a need to take risk-aversion action until the risk is reduced to an acceptable level or at least to a threshold where the cost of further risk reduction outweighs the perceived benefits.[28] The risks associated with less acceptable involuntary conduct, however, are frequently misperceived as being

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24. *See* UNFINISHED BUSINESS, *supra* note 4, at 95-97 (identifying disparity between environmental risk reality and public perception). It is recognized, however, that the reality of a representative democracy demands that societal preferences be given some deference when engaging in risk decisionmaking. Cross, *supra* note 15, at 49.

25. Comment, *Disclosing the Environmental Impact of Human Activities: How a Federal Pollution Control Program Based on Individual Decision Making and Consumer Demand Might Accomplish the Environmental Goals of the 1970's in the 1990's*, 138 U. PA. L. REV. 505, 511 (1989) (quoting Nathan, *The Role of Law and Lawyers in Environmental Regulation*, 8 ENVTL. L.Q. NEWSL. 1, 1-2 (1987)).

26. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 20 (commenting on risks considered acceptable or unacceptable by society).

27. *See* Sagoff, *The Principles of Federal Pollution Control Law*, 71 MINN. L. REV. 19, 40 (1986) [hereinafter Sagoff, *Federal Pollution Control Law*] (asserting that actual magnitude of risk may be less important than social, economic, and political context in which it arises). In fact, popular opposition to pollution risks arise not from an actual perception of quantitative risks, but from inherent cultural enmity to "unnatural" impositions such as pollution. *Id.* at 41. As a result, pollution, pesticide, and other toxic risks emanating from societal activity are perceived as less acceptable than naturally-occurring risks of potentially greater magnitude. *Id.* at 40-41.

28. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 20, 22 (evaluating thresholds of risk acceptance and control). Risks perceived by society to be unacceptable are ripe for "risk-aversion" action. *Id.* Optimally, such undesirable risks are then reduced to a level often dictated by a cost-benefit analysis. *Id.* at 22. Cost-benefit analysis has been defined as a determination of "whether the reduction in risk of material health impairment is significant in light of the costs of attaining that reduction." Natural Resources Defense Council v. EPA, 824 F.2d 1146, 1159 n.6 (D.C. Cir. 1987) (quoting American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 506 (1981)). Much environmental legislation, however, is interpreted as rejecting cost-benefit analysis in favor of action-forcing risk elimination requirements. *See* Schroeder, *Rights Against Risks*, 86 COLUM. L. REV. 495, 505 (1986) (identifying society's aversion to utilitarian cost-benefit analysis in environmental regulation). Public opinion surveys also indicate public rejections of cost-benefit analysis in environmental risk regulation. *Id.*

The use of cost-benefit analysis is most frequently challenged in cancer risk-aversion activity because pursuant to a consensus of the scientific community, federal regulatory agencies consider any level of exposure to a carcinogen a health risk. *See* Cross, *supra* note 15, at 3 (considering theory and reality of regulating cancer risks). *But see National Resources Defense Council,*

greater than those associated with voluntary conduct; resultant legislative and regulatory responses often reflect this reality.[29]

Regulatory responses to environmental risks are selective and result from decisions made pursuant to priority-setting mechanisms.[30] Regulation of cancer risks emanates from a risk assessment and risk management process that defines the nature of environmental protection.[31] Risk assessment is used by regulatory bodies to characterize the potential effect of environmental hazards on human health and is the basis for hazardous substance regulation.[32] Risk management, on the other hand, is the process of documenting risks and

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824 F.2d at 1152-54, 1163 (holding that section 112 of Clean Air Act does not "preclude consideration of cost and technological feasibility" in setting toxic emission standards).

29. *See* Sagoff, *Federal Pollution Control Law*, *supra* note 27, at 41 (discussing societal acceptance of voluntary risk regardless of cost or benefit and societal aversion to "unnatural" or involuntary risk); Doll and Peto, *The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today*, 66 J. OF THE NAT'L CANCER INST. 1191, 1256 (1981) (Table 20) (estimating percentage of cancer deaths attributable to avoidable and unavoidable risks). Empirically, it is estimated that 65% of cancer deaths are caused by dietary and smoking habits. *Id.* In contrast, 2% of cancer deaths are attributable to pollution. *Id.*; *see also* Starr, *Social Benefit versus Technological Risk*, 165 SCIENCE 1232, 1235 (1969) (stating that "we are loathe to let others do unto us what we happily do to ourselves").

30. Several methods of agency priority setting have been identified. *See* Shapiro & McGarity, *Reorienting OSHA: Regulatory Alternatives and Legislative Reform*, 6 YALE J. ON REG. 1, 20-22 (1989) (identifying ad hoc management choices, quantitative risk assessment, numerical scoring devices, and systematic selection by committee as alternative methods of priority setting). Most agencies rely on a process that incorporates elements of an ad hoc and quantitative listing approach rather than formal mechanisms for setting priorities. *Id.*

31. *See* Guidelines for Carcinogen Risk Assessment, 51 Fed. Reg. 33,992, 33,993 (1986) (explaining that regulation of risk is bifurcated into risk assessment and risk management components). Environmental risk assessment is described as the process of defining "the adverse health consequences of exposure to toxic agents." *Id.* This is comprised of hazard identification, dose-response assessment, exposure assessment, and risk characterization. *Id.* (citing MANAGING THE PROCESS, *supra* note 5, at 18). Risk assessment is distinguishable from risk management. The latter describes the process of choosing a method of regulating the identified risk. *Id.* This process must consider political, social, economic, and scientific data to ensure prudent risk abatement. *Id.*

32. *See Significant Risk Decisions*, *supra* note 15, at 1; MANAGING THE PROCESS, *supra* note 5, at 18 (discussing use of risk assessment to determine need of risk reduction for public health threat). Risk assessment is generally considered to be a four-step process: (1) hazard identification, or the determination of whether a substance is causally linked to a health effect; (2) dose-response assessment, or determination of the relation between exposure levels and health effects; (3) exposure assessment, or determination of human exposure; and (4) risk characterization, or description of the nature and magnitude of the risk. Public Citizen v. Young, 831 F.2d 1108, 1110 (D.C. Cir. 1987) (citing MANAGING THE PROCESS, *supra* note 5, at 3), *cert. denied*, Cosmetic, Toiletry and Fragrance Ass'n v. Public Citizen, 485 U.S. 1006 (1988). Risk characterization involves quantifying the risk and presenting a framework to gauge the significance of the risk. 51 Fed. Reg. 33,998 (1986). The process itself is controversial and subject to uncertainty. *See supra* note 15 and accompanying text (recognizing inherent uncertainty of risk assessment process); THE CONSERVATION FOUNDATION, *Risk Assessment and Control* ix (1985) (summarizing use of risk assessment and its usefulness for government regulation). "Virtually all elements of risk assessment are clouded with uncertainty. . . . The various scientific disciplines involved in assessing risk are not sufficiently developed either to explain the mechanisms by which particular causes produce particular effects . . . [and] the data needed to analyze particular risks are usually not available." *Id.* at 5. *But see Significant Risk Decisions*, *supra* note 15, at 1 (asserting that risk assessment, although uncertain, is best means available to examine need for risk reduction of potentially hazardous materials).

establishing the priorities of risk abatement activity.[33] Perceptions of risk, however, generally are determined not only by scientific data, but also by social values and public acumen.[34] As a result, regulatory choices and scientific disclosure may diverge.[35] The current absence of federal ETS regulation looms as a curious aberration and amalgum when the fundamental nature of the passive smoking risk is considered—exposure to ETS is involuntary. Since involuntary risks are often perceived by society as least acceptable, federal response would appear appropriate. Morever, the carcinogenic health risk which it imposes are analogous to those currently deemed appropriate for mitigation.[36] ETS is, therefore, ripe for legislative and regulatory activity.[37]

II. IDENTIFYING REGULATORY PARADOXES

A. Public Misperception

Modern environmental risk abatement legislation, implemented through pollution and substance use controls, reflect a societal belief that the health risks posed by certain environmental constituents demand affirmative remedial action.[38] Between 1969 and 1978 Congress enacted seven major environmental pollution control stat-

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33. *See* Ruckelshaus, *Risk in a Free Society*, 14 ENVTL. L. REP. 10,190, 10,190-94 (1984) (assessing problems inherent in risk assessment, communicating risk awareness, and determining that choices in risk management involve balancing certain risks against others in defining policy).

Implicit in the process of risk management are policy choices involving cost-benefit determinations. Some environmentalists argue that the spirit of environmental law and societal morality precludes such choices because human lives are at stake. *See* Doniger, *The Gospel of Risk Management: Should We Be Converted?*, 14 ENVTL. L. REP. 10,222, 10,222 (1984) (rejecting Ruckelshaus' "choice" theory and stating that "[w]hen the Administrator urges the American people to accept a philosophy of deliberately trading off lives and health against the economic costs of pollution controls . . . he is both disregarding the requirements of the Clean Air Act and swimming against the strong tide of public opinion").

34. *See* Sagoff, *On Markets for Risk*, 41 MD. L. REV. 755, 761-64 (1982) (stating "[p]eople want to determine the background level of risk. . . . It does not matter how cost-beneficial risks are; it is a question, rather of who controls them").

35. *See supra* notes 4, 6-7 and accompanying text (identifying disparities between EPA risk regulatory efforts and health risk realities).

36. *See infra* notes 100-06 and accompanying text (comparing ETS risk assessment with existing EPA risk management policy).

37. *See* R. GOODIN, *supra* note 1, at 71 (1989) (discussing involuntary nature of ETS exposure); INVOLUNTARY SMOKING, *supra* note 11, at 232-33 (citing survey that found 72% of nonsmokers favored separate smoking and nonsmoking work sections due to bad air quality). *But cf.* INVOLUNTARY SMOKING, *supra* note 11, at 233 (stating results of report that found no connection between comfort complaints and office smoking conditions).

38. *See* Sagoff, *Federal Pollution Control Law*, *supra* note 27, at 24 (stating "[p]ollution control laws, in their most general terms, belong to a long tradition of humanitarian legislation intended to ameliorate man's inhumanity to man"). Another way to view environmental legislation is as a legislative determination to protect man from the offensive action of others. *Id.* at 24-25.

utes.[39] A developing consensus, finding the human health and environmental risks posed by the by-products of our modern technological behavior unacceptable, inspired the passage of these laws. These legislative efforts, however, were responsive primarily to public sensitivities to environmental conditions and not environmental risk realities, two elements which are often incongruous.[40]

Consequently, our nation's current pollution control legislation, reflects an historical, yet antiquated, perspective that the central pollution threat to human health emanates from outdoor activity.[41] As a result, environmental protection legislation, such as the Clean Air Act, has been directed at protection of outdoor environmental conditions exclusively.[42] In recent years, however, much has been learned, and even more questions raised, about the quality of the ambient air in which we spend ninety percent of our time—the air of the indoor environment.[43] The risks imposed by indoor air pollutants, such as ETS, exceed those of many outdoor environmental hazards, such as water contaminants, hazardous waste sites, and many outdoor ambient air pollutants—risks currently regulated by

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39. Federal Insecticide, Fungicide, and Rodenticide Act of 1972, Pub. L. No. 92-516, 86 Stat. 973 (codified as amended at 7 U.S.C. §§ 136-136y (1988)); Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (codified as amended at 15 U.S.C. §§ 2601-2629 (1988)); Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act), Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251-1376 (1988)); Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974) (codified as amended at 42 U.S.C. §§ 300f-300j-10 (1988)); National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321-4370 (1988)); Noise Control Act of 1972, Pub. L. No. 92-574, 86 Stat. 1234 (codified as amended at 42 U.S.C. §§ 4901-4918 (1988)); Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (codified as amended at 42 U.S.C. §§ 6901-6987 (1988)); Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676; Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (codified as amended at 42 U.S.C. §§ 7401-7642 (1988)); Clear Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C.A. §§ 7401-7671 (Supp. 1991)).

The success of these legislative initiatives and the regulatory efforts they authorized has been debated. *See* CONSERVATION FOUNDATION, STATE OF THE ENVIRONMENT—A VIEW TOWARD THE NINETIES xli (1987) (stating "[p]roblems long recognized remain unsolved, and new ones continually appear. . . . Past successes belie a growing incongruity between where the problems are greater and where priorities . . . are directed").

40. *See supra* notes 34-37 and accompanying text (recognizing and discussing disparity).

41. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 19 (recognizing that while section 112 has historically been applied to outdoor air, nothing in Act demands this interpretation).

42. *Id.*

43. *Health Effects of Indoor Air Pollution: Hearing Before the Subcomm. on Envtl. Protection of the Sen. Comm. on Env't and Public Works*, 100th Cong., 1st Sess. 42-43 (1987) [hereinafter *Health Effects*] (statement of A. James Barnes, Deputy Administrator, EPA) (stating that although concern over indoor air pollution is not new, national focus is primarily on outdoor air pollution). This focus has changed with the increased public recognition of indoor air pollution and the health risks it raises. *Id.* at 43. As people spend approximately 90% of their day indoors, exposure to a pollutant indoors may lead to a "two to five times greater" risk than exposure to the same pollutant outdoors. *Id.*

EPA pursuant to federal legislative mandates.[44]

Several recent public health events placed the risks of ETS in proper perspective and illuminated the significance of public perception in the risk management scheme. In March, 1989, the Natural Resources Defense Council (NRDC) reported that daminozide, also known as Alar, a chemical used as a growth regulator on apples, was a carcinogen.[45] The public reaction was immediate and intense, and, under pressure from Congress and EPA, its primary manufacturer quickly halted domestic sales to alleviate exaggerated public concern.[46] Later that year, it was rumored that Chilean grapes had been contaminated with sodium cyanide.[47] The Food and Drug Administration (FDA) quickly responded to calm the public's fears.[48] The paradox? A single cigarette, inhaled by smokers and nonsmokers alike, contains more than one hundred times as much cyanide and is in an even more dangerous chemical form.[49]

In early 1990, benzene was discovered in several bottles of Perrier water.[50] Quickly, the entire national stock of Perrier was destroyed.[51] The FDA estimated that drinking a pint a day of benzene-

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44. *Id.* at 84-85 (testimony of John D. Spengler, Ph.D., Harvard Univ.); *see supra* notes 21-22 and accompanying text (citing relevant federal environmental legislation and implementing regulations).

45. *See* Roberts, *Pesticides and Kids*, 243 SCIENCE 1280 (1989) (discussing NRDC's finding that children may develop cancer in future due to exposure to Alar, as well as other pesticides). The NRDC estimated that an excess of 6000 preschool children, out of a population of 22 million (one in 4200) would get cancer from exposure to Alar by the time they reached the age of six. *Id.*

46. *See Apple Chemical Being Removed From U.S. Market*, N.Y. Times, June 3, 1989, at A1, col. 2 (reporting Uniroyal Chemical Company's decision to terminate its sales of Alar). EPA had earlier announced plans to ban the chemical used on five percent of the nation's red apples. N.Y. Times, Feb. 2, 1989, at A1, col. 1. *See also* N.Y. Times, Dec. 5, 1989, at A20, col. 1 (discussing public hysteria resulting in discontinuance of domestic Alar use); *Apple Panic Overblown Reaction to Inadequate Data Critics Say*, Chemical Marketing Rep., No. 12, at 9 (Mar. 20, 1989) (quoting John Rice, president of International Apple Institute as stating, "[i]t is not only irresponsible, but it is unforgivable that the NRDC has been able to create this level of hysteria"). The public fear was exemplified by actress Meryl Streep, who called for the immediate suspension of Alar. *Id.*

47. *See The Limits of Risk*, N.Y. Times, Mar. 19, 1990, at A3, col. 3 (discussing incident, where United States Embassy in Chile was warned that Chilean fruit had been injected with Lyonide); *Perrier Water with Benzene No Risk for Smokers—Nonsmokers Inhale More Benzene Than They Can Drink*, ASH SMOKING AND HEALTH REV. (ACTION ON SMOKING AND HEALTH, WASHINGTON, D.C.), 1, 6 (Feb. 1990) [hereinafter Action on Smoking and Health] (noting FDA response to rumored contamination of Chilean grapes).

48. *See* The Wall St. J., Nov. 16, 1989, at A1, col. 6 (discussing Chilean grape scare and subsequent FDA response). In response, the United States government banned the importation of Chilean fruit. *The Limits of Risk*, *supra* note 47, at A3, col. 3.

49. Action on Smoking and Health, *supra* note 47, at 6.

50. *See Perrier Recalls Its Water in U.S. After Benzene Is Found in Bottles*, N.Y. Times, Feb. 10, 1990, at A1, col. 3 (reporting voluntary recall of Perrier mineral water after sample bottles showed traces of benzene).

51. *Perrier To Destroy World Stock After Benzene Find*, Fin. Times Ltd., Feb. 15, 1990, at A1, col. 3.

contaminated Perrier would increase a consumer's lifetime risk of cancer by about one in one million.[52] The paradox? A nonsmoker is likely to ingest more than ten thousand times more benzene from sitting in a smoke-filled bar than from sipping a pint of Perrier.[53]

Similarly, asbestos exposure is actively regulated by EPA, yet the relative risk for lung cancer due to passive smoking may be more than one hundred times higher than the estimated risk from exposure to chrysotile asbestos found in buildings containing asbestos.[54] The reality is inescapable; if ambient tobacco smoke were emitted from an outdoor air polluting source, it too could be actively regulated as a toxic pollutant and a carcinogen under existing laws.[55] In fact, tobacco smoke contains every toxic air polluting substance defined and regulated by EPA under the Clean Air Act.[56] Public opinion and fears, though, rather than facts, appear to presage legislative and regulatory response; indoor air pollution apparently has not engendered the requisite public concern.

In 1987, EPA issued the results of a study commissioned to evaluate the disparities between the status of risk regulation and actual risk reality.[57] The results of the study confirmed what had been suspected, "[r]isks and EPA's current program priorities do not always match."[58] The study concluded that EPA's priorities reflect public

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52. N.Y. Times, *supra* note 50, at A1, col. 3.

53. Action on Smoking and Health, *supra* note 47, at 6. Most of the benzene in cigarettes is in the sidestream smoke which enters the air and is breathed in by the nonsmoker. *Id.*

54. *See* Fielding & Phenow, *Health Effects of Involuntary Smoking*, 319 NEW ENG. J. OF MED. 1453, 1455 (1988) (comparing lung cancer risks from ETS and asbestos exposure); Toxic Substances Control Act, 15 U.S.C. § 2643 (1988) (authorizing EPA to promulgate regulations effecting asbestos risk abatement in public school buildings).

55. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 19 (stating that Clean Air Act historically is interpreted to apply only to outdoor air pollution). If ETS was an outdoor air phenomenon, it would clearly fall within the Clean Air Act's interpretation of pollutants to be regulated. *Id.* at 19-20. Regardless of this interpretation, the Clean Air Act does not prohibit regulation of indoor air. *Id.* Section 112 of the Clean Air Act establishes a one in one million annual per-capita risk (1×10^{-6}) as the threshold for acceptable risk. 42 U.S.C.A. § 7412(f)(2)(A) (Supp. 1991). The risk from ETS exposure has been documented at 1×10^{-4}. *See infra* notes 99-104 (reviewing ETS risk assessments).

56. 133 CONG. REC. 3328-29 (1987) (statement of Rep. Ritter).

57. *See generally* UNFINISHED BUSINESS, *supra* note 4 (reporting results of study on EPA's risk-based programs). In an effort to implement efficiently its mission and properly focus its priorities, the EPA commissioned a task force to evaluate 31 environmental problems in light of four different types of risk: cancer risks, non-cancer health risks, ecological effects, and welfare effects. *Id.* at xiii. *But see* REDUCING RISK, *supra* note 3, at 7 (recognizing importance and shortfalls of UNFINISHED BUSINESS). The SAB criticized UNFINISHED BUSINESS for the breadth of the environmental problems considered, stating that the ranking of both toxic and non-toxic hazards made its assessment somewhat circumspect. *Id.* The SAB also criticized the study's design for comparing what may be environmental noncommensurates, such as air and water pollutants, and limiting the assessment to those risks that EPA is currently authorized to regulate. *Id.*

58. UNFINISHED BUSINESS, *supra* note 4, at 95-96. The source of the disparity was considered explainable by public perception of the seriousness of environmental risks. *Id.* at 95.

opinion more so than scientifically calculated risks and identified the problem of indoor air pollution as a major area of high cancer risk, low public awareness, and, consequently, inadequate EPA effort.[59]

B. Regulatory Inconsistencies

False perceptions of environmental risk and incongruous risk regulation approaches engender policy failures which ultimately undermine the potential for effective regulatory activity. Admittedly, the risk-protection standards formulated by EPA pursuant to its enabling statutes are inexact and divergent.[60] The complete failure to regulate environmental hazards posing health risks analogous to those which are actively and legitimately controlled, however, undermines the potential for efficacious environmental protection. While it is now firmly recognized and accepted that risk protection does not command risk elimination, established thresholds of acceptability should be consistently applied to analogous pollution constituents.[61] The Federal Government's failure to do so, however, reflects an unacceptable regulatory paradox.

While a disparity between federal regulatory action and risk reality may be explained by public perception and socioeconomic forces, these factors do not justify regulatory omission.[62] As one

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59. *Id.* at 96-97. Of course, as this study and others have observed, this divergence is not necessarily completely problematic. Regulatory agencies are the product of representative government and their actions must, to some extent, reflect the public will. *See* Cross, *supra* note 15, at 49 (acknowledging frequent divergence between public risk perception and actual risk and recognizing its role in risk decisionmaking). Public agencies that are not responsive to public concern risk losing their legitimacy. *Id.*

In a consensus ranking of environmental problem areas on the basis of population cancer risk, the risk from indoor air pollution, with ETS as the main component, ranked fourth out of 31 identified problem areas. UNFINISHED BUSINESS, *supra* note 4, at 28. This placed indoor air pollution in the highest relative risk category. *Id.* In contrast, the study identified several high public image risks as areas of "low risk/high EPA effort." *Id.* at 95. This list included active hazardous waste disposal sites regulated under the Resource Conservation and Recovery Act, inactive hazardous waste sites that fall under the purview of the Superfund legislation, and chemical releases from storage tanks and municipal non-hazardous waste. *Id.*

60. *See generally supra* notes 21-22 and accompanying text (discussing non-uniformity of EPA guidelines).

61. *See* Burning of Hazardous Waste in Boilers and Industrial Furnaces (BIF), 56 Fed. Reg. 7134 (1991) (recognizing that regulation of individual air pollutants with well-understood and analogous risks should be regulated consistently). In its promulgation of the BIF rule, the EPA established a 10^{-5} risk threshold level for hazardous waste emissions emanating from boilers and industrial furnaces. *Id.* Commentators challenged the regulation, arguing that it was inconsistent with the risk-level of 10^{-4} established for regulation benzene emissions pursuant to section 112 of the Clean Air Act. *See infra* notes 72-85 and accompanying text (discussing implementation of section 112 of Clean Air Act). The EPA responded by distinguishing the emissions regulated under the BIF rule from the benzene standard by asserting that while BIF emissions were multifarious and posed uncertain risks, the benzene regulation involved a single pollutant posing well-documented health risks. 56 Fed. Reg. 7134 (1991).

62. *See* UNFINISHED BUSINESS, *supra* note 4, at 96-100 (citing chemical waste disposal, water pollution, chemical plant accidents, and outdoor air pollution as risks engendering high

commentator noted, "just as the government cannot order every thousandth citizen to be placed before a firing squad, it cannot stand by as citizens are exposed to environmental hazards."[63] In addition to public indifference, ignorance, and even tacit acceptance, the deficiency in public health risk protection is further fueled by the political intimidation of interested parties such as the tobacco lobby.[64] While political and social realities perhaps preclude value-free, scientifically objective decisionmaking, federal regulatory failure is illegitimate where the resultant public risk, from exposure to carcinogens such as ETS, is inconsistent with the health-protective premise of federal environmental legislation.[65]

C. *Establishing Legitimate and Consistent Standards: Section 112 of the Clean Air Act*

It has been argued that individuals possess a fundamental right to be protected from the cancer causing conduct of others.[66] Predictably, the public demand for environmental health risk protection parallels the dramatic increase in recognized cancer sources over the last half century.[67] In fact, federal regulatory agencies, particu-

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public concern, yet posing relatively low health risks). These risk areas are also those which inspire high levels of EPA activity. *Id.*

63. Schroeder, *supra* note 28, at 507 (discussing public's right to be free from health hazards posed by technology and pollution).

64. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 9-10 (discussing impact of tobacco lobby and cigarette industry on regulatory and legislative impasse concerning smoking restrictions). The highly profitable tobacco industry is composed of six companies who are represented by the Tobacco Institute. *Id.* The stated goal of the Tobacco Institute is:

> to preserve the ability of business to enter into the free marketplace, . . . to create a climate in which our member companies can compete without unwarranted restraints. This means that we assist the nation's news media, its public policy setters, and the public itself in separating the fact from fiction concerning smoking and health. It means pointing out the gaps in scientific knowledge as well as . . . overstatements of what is known. It means emphasizing the danger of accepting fallacy for fact in any scientific dispute before all information is available.

Id. at 10 (quoting *Tobacco Inst.*, 1, 7 (Feb. 1982)); *see also supra* note 13 and accompanying text (reviewing tobacco industry's challenge to recent ETS risk assessments).

65. *See* Sagoff, *Federal Pollution Control Law*, *supra* note 27, at 41-42 (assessing difference between value-free and value-reflective pollution regulation). Conceivably, the National Environmental Policy Act (NEPA) of 1969 attempts to balance the two approaches by directing federal agencies to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences . . . in planning and decisionmaking which may have an impact on man's environment." *Id.* at 42 (quoting National Environmental Policy Act, 42 U.S.C. § 4332(A) (1982)); *see also* Comment, *supra* note 25, at 508-09 (citing NEPA as reflection of congressional desire to achieve public good by means of social regulation as opposed to traditional economic regulation).

66. *See* Schroeder, *supra* note 28, at 507 (quoting Gewirth, *Human Rights and the Prevention of Cancer*, 17 AM. PHIL. Q. 117, 117 (1980)) (stating "[e]very person has a basic human right not to have cancer inflicted on him by the actions of other persons").

67. *See* Davis & Magee, *Cancer and Industrial Chemical Production*, 206 SCIENCE 1356, 1357 (1979) (citing development of cures for diseases which previously caused premature death and production of high-risk chemicals as two reasons for increase in cancer incidence).

larly the EPA, acknowledge that the scientific uncertainties surrounding the nature and causes of cancer demand that any exposure to carcinogens be considered a health risk.[68] Concomitantly, however, it has been recognized that such zero-threshold protection is unrealistic in light of unavoidable and inevitable technological and economic considerations.[69] Thus, visions of a pristine environment and absolute protection from environmental risk factors may be fantastical. Nonetheless, efforts to cleanse our environment and protect human health should consist of rational, consistent, and therefore legitimate regulatory measures which thereby ensure effective environmental policy.[70] Pragmatically, this ideal could be characterized as a governmental duty to regulate those risks which exceed a consensual threshold of acceptability, above which society can expect or demand consistent protection from health hazards imposing analogous risks.[71]

The dichotomy between carcinogen risk reality and regulatory practicality which characterizes the federal carcinogen risk regulation process is epitomized by the administrative history of section 112 of the Clean Air Act.[72] The provision was designed to be the

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68. *See EPA's Air Pollution Control Program: Hearing Before the Subcomm. on Oversight and Investigations of the House Comm. on Energy and Commerce*, 98th Cong., 1st Sess. 1, 232 (1983) (statement of William Ruckelshaus, EPA Administrator) (stating that "EPA has generally in the past concluded that in the absence of sound scientific evidence to the contrary, prudent public health policy requires that we assume no threshold of effect for carcinogens").

69. *See* Guidelines on Carcinogen Risk Assessment, 51 Fed. Reg. 33,992 (1986) (stating that cost considerations and technological advancements make risk elimination unreasonable); *infra* note 82 and accompanying text (discussing implementation of section 112 of Clean Air Act).

70. *See* Schroeder, *supra* note 28, at 506 n.43 (citing other legislation protecting public health as rational and consistent).

71. *Id.* (discussing regulation of chemicals, food, drugs, and hazardous waste); *see also infra* note 102 and accompanying text (comparing lung cancer risks of ETS with cancer risks imposed by regulated air pollutants such as benzene).

72. *See* Clean Air Act, 42 U.S.C. § 7412(b)(1)(B) (1988) (codified as amended at 42 U.S.C.A. § 7412 (Supp. 1991)) (providing that hazardous air pollutants be reduced to an "ample margin of safety to protect public health"); 42 U.S.C. § 7412(a)(1) (1988) (defining hazardous air pollutant as "an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious, irreversible . . . illness"). Given the scientific concern that any level of carcinogen exposure may impose a health risk, such a standard has been interpreted to mean a zero-exposure threshold. 136 CONG. REC. S16,920, S16,925 (daily ed. Oct. 27, 1990) (statement of Sen. Durenburger); *see* Guidelines for Carcinogen Risk Assessment, 51 Fed. Reg. 33,992 (1986) (establishing EPA's general risk assessment policy). EPA's reluctance to adopt a zero-emission standard was based upon the potential repercussions to the United States economy given the technological infeasibility of complying with a zero-emission standard. *Id.* This was reflected by the fact that only eight pollutants were classified under section 112 as hazardous pollutants in the 18 years following the passage of the Clean Air Act. *Id.*; *see* National Emission Standards for Hazardous Air Pollutants, 40 C.F.R. § 61.01 (1990) (establishing standards for asbestos, benzene, beryllium, inorganic arsenic, mercury, coke over emissions, radionuclides, and vinyl chloride).

EPA's primary mechanism for regulating carcinogenic air pollutants.[73] A reading of the statute's language and the statistics verifying the pervasiveness of human cancer suggest and support the banning of such non-quantifiable cancer risks under a zero-threshold theory.[74] The EPA, however, in its interpretation of the provision, rejected such an approach and instead relied on "significant" risk principles of regulation to determine proper standards of control.[75]

The District of Columbia Circuit in *Natural Resources Defense Council, Inc. v. United States Environmental Protection Agency*[76] sanctioned this approach and elucidated the EPA's regulatory authority under section 112 of the Clean Air Act. The court held that "safe" under

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73. *See* Cross, *supra* note 15, at 22 (addressing EPA's implementation of Clean Air Act); EPA, National Emission Standards for Identifying, Assessing, and Regulating Airborne Substances Posing a Risk of Cancer, 44 Fed. Reg. 58,641 (1979) (establishing EPA procedures for regulating carcinogenic risks). *But see* Graham, *supra* note 20, at 101 (perceiving regulatory failure of section 112 as resulting from vagueness of statutory language).

74. Graham, *supra* note 20, at 116; *see Clean Air Act Amendments of 1983-Part 2: Hearings on S. 768 Before the Comm. on Env't and Public Works*, 98th Cong., 2d Sess. 50, 51 (1983) (statement of William D. Ruckelshaus, EPA Administrator) (acknowledging that cancer is the central reason for concern about implementations of section 112, and that "a firm base of public support" exists for control of airborne carcinogens); *see also supra* note 72 (providing statutory language of section 112).

75. Graham, *supra*, note 20, at 110. The Supreme Court fully articulated the concept of "significant" risk in Industrial Union Department, AFL-CIO v. American Petroleum Institute, 448 U.S. 607, 653 (1980) (plurality opinion). In *Industrial Union Dep't*, the Court invalidated an Occupational Safety and Health Administration (OSHA) regulation of benzene, a known carcinogen, without showing that the chemical's presence in the workplace posed a "significant" risk to worker health. *Id.* The Court held that:

> "safe" is not the equivalent of "risk-free." There are many activities that we engage in every day—such as driving a car or even breathing city air—that entail some risk of accident or material health impairment; nevertheless, few people would consider these activities "unsafe." Similarly, a workplace can hardly be considered "unsafe" unless it threatens the workers with a significant risk of harm.

Industrial Union Dep't, 448 U.S. at 642. The Court suggested that a lifetime occupational cancer risk of one in one thousand (10^{-3}) could clearly be considered a significant risk level. *Id.*

> Some risks are plainly acceptable and others are plainly unacceptable. If, for example, the odds are one in one billion that a person will die from cancer by taking a drink of chlorinated water, the risks clearly could not be considered significant. On the other hand, if the odds are one in one thousand that regular inhalation of gasoline vapors containing 2% benzene will be fatal, a reasonable person might well consider the risk significant and take appropriate steps to decrease or eliminate it.

Id. at 655; *see* Cross, *supra* note 15, at 7 (discussing congressional intent and Agency interpretation of "margin of safety" language in Clean Air Act); *see also* Ethyl Corp. v. EPA, 541 F.2d 1, 13 (D.C. Cir.) (holding that finding of "significant risk" was appropriate standard for air pollution regulation), *cert. denied*, 426 U.S. 941 (1976).

Regulation of "significant risk" is explicit in other health protection statutes. The Toxic Substances Control Act (TSCA) requires the EPA Administrator to find that a "chemical substance or mixture presents . . . a significant risk of serious or widespread harm to human beings from cancer . . . ." in order to qualify for regulation. 15 U.S.C. § 2603(f) (1988). By the end of 1984, however, only four chemicals on the market since 1979 were regulated. J. MENDELOFF, THE DILEMMA OF TOXIC SUBSTANCE REGULATION 2 (1988). *See supra* note 22 (examining risk regulation policies under various environmental statutes).

76. 824 F.2d 1146 (D.C. Cir. 1987).

section 112 meant "acceptable risk," not a complete elimination of risk.[77] The NRDC argued that given the Agency's inability to guarantee health protection from carcinogens, the EPA should be required to set a zero-threshold emission standard for vinyl chloride, a known carcinogen, under section 112 of the Clean Air Act.[78] The Agency instead used cost and technological feasibility to determine a safe level of exposure.[79] After an evaluation of the legislative history of the section, the court rejected the NRDC's argument for a zero-emission standard yet asserted that the Agency could not consider cost and technological feasibility in determining a safe level of exposure to toxic air pollutants until a safe or acceptable risk level was achieved.[80] Once "safety" was ensured, however, the Agency could, in full compliance with section 112, use cost and technological considerations in determining an "ample margin of safety."[81] Subsequent EPA regulatory action implementing section 112 reflects the holding in the *National Resources Defense Council* decision.[82] The EPA now considers lifetime cancer risks greater than one in one hundred thousand (10^{-5}) for large numbers of exposed people or one in ten thousand (10^{-4}) individual exposure risk, worthy of regulation under section 112.[83]

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77. National Resources Defense Council v. EPA, 824 F.2d 1146, 1165 (D.C. Cir. 1987) (citing Environmental Defense Fund v. EPA, 598 F.2d 62, 83-84 (D.C. Cir. 1978)).

78. *Id.* at 1152 (discussing basis for challenge to EPA standard).

79. *Id.* at 1154-55 (explaining EPA Administrator's standard-setting rationale). The EPA argued that section 112 permitted the Agency to limit emissions of non-threshold air pollutants to the extent achievable by the best available control technology, where such level would be below a demonstrated threshold of harm and the costs of further reducing emissions would outweigh the benefits to human health. *Id.*

80. *Id.* at 1166 (noting that Administrator must determine what level constitutes acceptable risk).

81. *Id.* at 1165 (legitimizing use of cost considerations in "setting the standard at the lowest *feasible* level") (emphasis added).

82. *See* National Emission Standards for Hazardous Air Pollutants, 54 Fed. Reg. 38,044 (1989) (establishing "EPA's policy for promulgation [of] National Emission Standards for Hazardous Air Pollutants (NESHAP) for the protection of public health under section 112"). The guidelines purport to provide "maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million (10^{-6}), and (2) limiting to no higher than approximately one in ten thousand (10^{-4}) the estimated risk that a person living near a [toxic pollutant source] would have if he or she were exposed to the maximum pollutant concentrations for 70 years." *Id.* at 38,045. The regulations follow the two-step approach outlined in the *National Resources Defense Council* decision by allowing the EPA to first ascertain an "acceptable health risk" on the basis of available health information and then to find "an ample margin of safety" by considering both health and economic factors. *Id.*

83. *See* National Emission Standards for Hazardous Air Pollutants, 54 Fed. Reg. 38,045 (1989) (discussing NESHAP standards established under section 112). EPA stated that it would estimate risk based on maximum individual risk and that a risk of no greater than 10^{-4} would be considered safe. *See id.* at 38,046 (noting that the presumptive 10^{-4} risk level "comports with many previous health risk decisions by EPA"); *see also* Cross, *supra* note 15, at 29-30 (evaluating EPA's NESHAP for benzene emissions from coke by-product plants).

The Clean Air Act Amendments of 1990 generally adopt the two-stage risk regulation approach elucidated in *National Resources Defense Council*. Under this method, EPA must apply the maximum achievable control technology (MACT) available to reduce or eliminate the risks imposed by the delineated hazardous air pollutants.[84] If lifetime excess cancer risks greater than one in one million (10^{-6}) remain after applying MACT, the EPA Administrator is required to set standards which provide an ample margin of safety to protect public health.[85] Costs and other factors may not be considered until an "ample margin of safety" is achieved.[86]

It is now clear that the regulation of hazardous air pollutants is mandated until pollution is reduced to the minimum levels allowed by technology. Even then, cancer risks exceeding a certain threshold must be controlled.[87] By delineating almost two-hundred different hazardous air pollutants as worthy of control under section 112 of the Clean Air Act amendments, Congress acknowledges that the degree of risk imposed by these pollutants justifies austere risk management.[88]

The regulatory battle reaches a pinnacle when voluntary human behavior, such as tobacco smoking, begets involuntary human health risks.[89] It is clear that society tends to resent health risks emanating from profit motivations.[90] A significant regulatory challenge arises, however, with risks such as those from ETS, which, unlike many presently regulated air pollutants, are not the by-products of activities dictated by personal profit motivations, such as industrial plant processes or waste production, but emanate instead from individual physical desires, dependencies, and addictive

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84. Clean Air Amendments of 1990, 42 U.S.C.A. § 7412 (Supp. 1991). Section 112 of the 1990 Clean Air Act Amendments lists 189 new chemicals for EPA regulation. *Id.* The process for regulation of non-threshold pollutants, or carcinogens, adopts the policy established in National Resources Defense Council v. EPA, 824 F.2d 1146 (D.C. Cir. 1987). This policy was also promulgated in the NESHAP for benzene. National Emission Standards for Hazardous Air Pollutants, 54 Fed. Reg. 38,044 (1989).

85. 42 U.S.C.A. § 7412(f)(2) (Supp. 1991). This second-tier regulation provision represents a codification of judicial and regulatory interpretations of risk regulation requirements from hazardous air pollutants under the original section 112 provisions. *See* 136 CONG. REC. S16,932 (daily ed. Oct. 27, 1990) (statement of Sen. Durenburger).

86. 42 U.S.C.A. § 7412(f)(2)(A) (Supp. 1991).

87. *See supra* notes 82-83 and accompanying text (discussing permissible risk thresholds under Clean Air Act).

88. 42 U.S.C.A. § 7412 (Supp. 1991).

89. *See* R. GOODIN, *supra* note 1, at 69-73 (examining voluntariness of passive smoking and concluding that ETS exposure is unnecessary by-product of human activity).

90. *See* Sagoff, *On Markets for Risk*, *supra* note 34, at 763 (assessing proclivity of public to react negatively to risks emanating from self-serving interests of risk creator).

habits.[91]

While risk abatement may be legitimately tempered by "significant" risk thresholds, ETS presents cancer risks that are magnitudes beyond these thresholds of societal and governmental acceptance.[92] Risk management without assessment may be overprotective and superfluous, yet assessment without needed management is neglectful and unacceptable.[93] The ETS lung cancer risk is involuntarily imposed by voluntary behavior and is left untempered by illegitimate legislative and regulatory policy failures, rather than legitimate risk-regulation considerations. This condition is unjustified and reflects an indefensible policy paradox.

III. ETS RISK REALITIES

In October 1986, Congress passed the Superfund Amendments and Re-authorization Act (SARA); Title IV of SARA, the Radon Gas and Indoor Air Quality Research Act, established the first congressional mandate for a national indoor air research program.[94] While this title hardly received the fanfare of its adjoining sections that reauthorized the nation's troubled solid waste cleanup process, the irony behind this reality cannot be ignored.[95] This provision authorized the EPA and other federal agencies to engage in research and public information dissemination efforts in order to assess and characterize the risks of indoor air pollution.[96]

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91. *See* R. GOODIN, *supra* note 1, at 7-15 (examining health risks and addictive properties of smoking).

92. *See infra* notes 97-104 and accompanying text (reviewing health risks of ETS).

93. *See supra* notes 31-33 and accompanying text (comparing risk assessment with risk management). The new section 112 of the Clean Air Amendments of 1990 authorizes the EPA, in conjunction with the National Academy of Sciences, to examine the nature and effectiveness of risk assessment in government and industry and evaluate its ability to accurately reflect public health priorities. 42 U.S.C.A. § 7412(o) (Supp. 1991).

94. Radon Gas and Indoor Air Quality Research Act of 1986, Pub. L. No. 99-499, § 403(e), 100 Stat. 1758 (codified at 42 U.S.C.A. § 7401 (1990)).

95. *See* UNFINISHED BUSINESS, *supra* note 4, at 95-97 (identifying regulation of hazardous waste sites as example of inconsistencies between EPA regulatory priorities and environmental risk realities).

96. *See* 1 United States Envtl. Protection Agency, Report to Congress on Indoor Air Quality 2 (1989) (outlining directive of Title IV of SARA). SARA Title IV directs EPA to:

> (1) conduct research on all facets of the indoor air quality issue; (2) to disseminate information on indoor air quality problems and solutions; (3) to establish two advisory committees to assist EPA in carrying out the mandate of Title IV; and (4) to submit two reports to Congress describing in the first report EPA's plans for implementing Title IV and in the second report, describing the activities carried out under Title IV and making whatever recommendations the Agency deems appropriate.

Id.; *see also Health Effects of Indoor Air Pollution: Hearing Before the Subcomm. on Envtl. Protection of the Senate Comm. on Env't and Public Works*, 100th Cong., 1st Sess. 43 (1987) (statement of A. James Barnes, EPA Deputy Administrator) (identifying problem of indoor air pollution and acknowledging that "for some pollutants, indoor exposures are two to five times greater than outdoor exposures of the same pollutant"). Types of indoor air pollutants include biological

Pursuant to its authority under Title IV of SARA, the EPA assessed the ETS health risk and concluded that passive smoke causes approximately 3800 lung cancer deaths per year.[97] This risk assessment followed numerous studies conducted over the past several years linking ETS to cancer, heart disease, and serious illnesses among children.[98] An independent science advisory board of the

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aerosols; formaldehyde, a probable carcinogenic gas; radon, a radioactive gas widely linked with lung cancer; asbestos fibers, a cause of lung disease including mesothelioma and lung cancer; nitrogen dioxide; household pesticides and solvents; and environmental tobacco smoke. *Id.* at 92-93; *see also* 25 YEARS OF PROGRESS, *supra* note 9, at 53 (citing ETS and radon as indoor air pollutants which have been linked to lung cancer). For a complete overview of the scientific data on indoor air pollution, see *Indoor Air Quality Act of 1989: Hearing on S. 657 Before the Subcomm. on Superfund, Ocean, and Water Protection of the Senate Comm. on Env't and Public Works*, 101st Cong., 1st Sess. 43 (1989).

97. *See* Health Effects of Passive Smoking: Assessment of Lung Cancer in Adults and Respiratory Disorders in Children, 55 Fed. Reg. 25,874 (1990) (announcing availability of EPA draft report assessing and quantifying deaths caused by ETS). The EPA also issued a report entitled "Environmental Tobacco Smoke: A Guide to Workplace Smoking Policies." *See* 55 Fed. Reg. at 25,873 (announcing availability of draft for public comment); *see also supra* note 11 and accompanying text (discussing EPA's findings and recent confirmation of findings by independent science advisory board); Altman, *The Evidence Mounts on Passive Smoking*, N.Y. Times, May 29, 1990, § C (Science Times), at 1 (discussing health impacts of ETS and announcing release of risk assessment report). The EPA report represents the first official quantification of fatalities attributable to ETS. *Id.* The report concludes that lung cancer in adults and increased respiratory infections in children of smokers can be attributed to passive smoking. *Id.* The risk estimates are based on 24 epidemiologic studies from eight countries and on the two 1986 reports by the National Research Council and the Surgeon General. *Id.*

In 1986, the National Research Council (NRC) of the National Academy of Sciences and the United States Surgeon General of the Public Health Service concluded that involuntary smoking significantly increases the risk of lung cancer in adults. NATIONAL RESEARCH COUNCIL, *supra* note 11, at 10-11; INVOLUNTARY SMOKING, *supra* note 11, at 26. In addition, both studies agreed that ETS exposure substantially increases respiratory illness in children and may also aggravate heart disease. NATIONAL RESEARCH COUNCIL, *supra* note 11, at 16; INVOLUNTARY SMOKING, *supra* note 11, at 41.

98. *See* Hirayama, *Nonsmoking Wives of Heavy Smokers Have a Higher Risk of Lung Cancer: A Study from Japan*, 282 BRIT. MED. J. 183-85 (1981) (reporting findings of first major study of cancer risks from passive smoke). Test subjects were the nonsmoking wives of smoking men in Japan. The women studied showed an increased lung cancer death rate of eight per 100,000 per year. *Id.*; Sandler, Comstock, & Chee, *Heart Disease Mortality in Nonsmokers Living with Smokers*, 127 AM. J. EPIDEMIOLOGY 915, 922 (1988) (citing evidence of causal relationship between ETS exposure and heart disease). *But see* INVOLUNTARY SMOKING, *supra* note 11, at 10-11 (stating that although several studies have examined relationship between ETS exposure and cardiovascular disease, no definitive causal relationship can be drawn). *See also* INVOLUNTARY SMOKING, *supra* note 11, at 10 (linking acute and chronic respiratory illness among children of parents who smoke). According to the United States Surgeon General, the prevalence of respiratory symptoms and the incidence of respiratory infections are higher in children of smoking parents. *Id.* Children of smoking parents have an increased frequency of bronchitis, pneumonia, tracheitis, laryngitis, and other respiratory illnesses and diseases when compared with children of nonsmokers. *Id.*; *see* UNFINISHED BUSINESS, *supra* note 4, at 28 (identifying ETS, derived from mainstream smoke and sidestream smoke, as main source of indoor air health risk). *Id.* at 28. Mainstream smoke is inhaled by the smoker, filtered in the lungs, and exhaled. *Id.* Sidestream smoke is the smoke emitted directly into the air from the lit end of the tobacco product. *Id.* Mainstream and sidestream smoke both contain oxides of nitrogen, nicotine, carbon monoxide, and various carcinogens and non-carcinogens. *Id.*; *see* Fielding & Phenow, *Health Effects of Involuntary Smoking*, 319 NEW ENG. J. MED. 1452, 1452 (1988) (concluding that mainstream and sidestream smoke are linked to cancer in nonsmokers); 25 YEARS

EPA confirmed the assessment.[99] The estimated 3800 deaths recently announced by the EPA suggests an approximate annual per capita lung cancer risk of one in ten thousand (10^{-4}), a risk figure which falls between the established federal thresholds of acceptable and "significant" risk.[100]

The reality of these findings is beyond dispute.[101] The ETS risk significantly exceeds those environmental risks currently regulated by our federal agencies and kills more people than all airborne pollutants currently regulated by the EPA.[102] Consequently, in accordance with its guidelines for assessing the health risks of environmental pollutants, the EPA now is expected to classify ETS as a Group A carcinogen, an agent known to cause cancer in humans.[103]

OF PROGRESS, *supra* note 9, at 25 (finding connection between ETS and cancer). This report concludes:

> The absence of a threshold for respiratory carcinogenesis in active smoking, the presence of the same carcinogens in mainstream and sidestream smoke, the demonstrated uptake of tobacco smoke constituents by involuntary smokers, and the demonstration of an increased lung cancer risk in some populations with exposure to ETS leads to the conclusion that involuntary smoking is a cause of lung cancer.

Id. ETS contains over 4000 chemicals, at least 43 of which are known human or animal carcinogens. INDOOR AIR FACTS No. 5, *supra* note 10, at 1. EPA research has also shown that ETS is the major source of mutagens indoors. *Id.* The effect of ETS on nonsmokers depends on the duration of exposure. *Id.* Studies suggest that passive smokers have a 34% greater chance of contracting lung cancer than those not subjected to ETS. R. GOODIN, *supra* note 1, at 61. One recent study estimated that passive smoking may be responsible for 53,000 deaths annually among nonsmokers. Glantz & Parmley, *supra* note 8, at 38; *see also* Boston Herald, June 26, 1990, at 8, col. 1 (citing study which estimates 32,000 heart-related deaths and 18,000 deaths from all cancers, including lung cancer). *See generally* INVOLUNTARY SMOKING, *supra* note 11, at 21-119 (reviewing scientific literature linking ETS to adverse health effects including lung cancer).

99. *See supra* note 11 and accompanying text (discussing April 18, 1991 advisory board recommendation that ETS be classified as Class A human carcinogen, substance known to cause cancer in humans).

100. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 23 (arguing that estimated individual risk level of 10^{-4} from passive smoke exposure is well within risk levels deemed ripe for regulation); *supra* notes 21, 72-87 and accompanying text (discussing acceptable societal risk and "significant" risk thresholds established by federal regulatory agencies).

101. *Contra* LAYARD, *Environmental Tobacco Smoke and Cancer*, *supra* note 13, at 99-112 (challenging conclusions, endorsed by EPA, of ETS risk).

102. *See* R. GOODIN, *supra* note 1, at 61-62 (citing studies published by United States National Academy of Sciences and Department of Health and Human Services). The approximately one in ten thousand annual per capita risk of cancer from ETS (10^{-4}) is one hundred times greater than the level of significant risk established pursuant to section 112 of the Clean Air Act. *See* National Emission Standards for Hazardous Air Pollutants, 54 Fed. Reg. 38,044 (1990) (establishing significant risk levels in promulgation of benzene standards); R. GOODIN, *supra* note 1, at 63 (observing that ETS results in more deaths than do regulated air pollutants). It is also one hundred times greater than the Nuclear Regulatory Commission would use to identify unacceptable cancer mortality risks from nuclear reactor accidents. *Id.* The figure is ten thousand times greater than the "virtually safe" standard established by the Food and Drug Administration for evaluating carcinogenetic residues in foods. *Id.* (citing Repace, *Risks of Passive Smoking*, *supra* note 17, at 23).

103. The science advisory board has recommended that ETS be classified as a Class A carcinogen. *Panel Calls for Alert on Risks of Passive Smoke*, L.A. Times, Apr. 19, 1991, at A4, col.

In the words of former Surgeon General C. Everett Koop, "the scientific case against involuntary smoking as a public health risk is more than sufficient to justify appropriate remedial action, and the goal of any remedial action must be to protect the nonsmoker from environmental tobacco smoke."[104] ETS is pervasive. It is in our homes, in public conveyances, in public and private buildings, and in the workplace. In all of these places, ETS is potentially deadly. It is an involuntary, unnatural risk—the type of risk that generally invokes the greatest fear—and is emitted from a readily identifiable source, the smoker.[105] While a societal mandate to eliminate ETS from the public arena and to encourage legislative response would be consistent with the current approach to regulate risks of lesser magnitude, ETS remains unregulated by the federal government.[106]

IV. METHODS OF PROTECTION

A. Inadequate Judicial Relief

In light of the direct harmful effect of ETS on others and the unavailability of effective voluntary control mechanisms,[107] a societal consensus stating that there are no legal grounds for a "right to

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1. *See supra* note 11 and accompanying text (discussing recent findings of science advisory board); *see also* EPA Guidelines for Estimating Exposures, 51 Fed. Reg. 34,042 (1986) (characterizing pollutant as Group A carcinogen only when there is sufficient evidence from epidemiological studies to support finding that causal relationship exists between exposure to chemical and cancer).

104. INVOLUNTARY SMOKING, *supra* note 11, at xxi. Although the majority of studies researching the link between ETS and lung cancer examine the effect on wives of smoking husbands, the Surgeon General's report states that there is no reason to believe that the increased risk of lung cancer is limited to home exposure. *Id.*

105. *But see* R. TOLLIVER & R. WAGNER, SMOKING AND THE STATE: SOCIAL COSTS, RENT SEEKING, AND PUBLIC POLICY 76 (1987) (suggesting that since tobacco smoke is readily perceptible through sight and smell, "prolonged exposure to ETS cannot be anything but the result of voluntary choice").

106. *See supra* note 4 and accompanying text (identifying disparity between actual risk and regulatory activity by EPA). In 1983, 69% of adults believed that smokers should refrain from smoking in their presence. 25 YEARS OF PROGRESS, *supra* note 9, at 224. By 1987, 77% of adults, comprised of 64% smokers and 84% nonsmokers, believed smokers should refrain from smoking in front of others. *Id.*

107. *See 'Common Courtesy' and the Elimination of Passive Smoking*, 262 J. AM. MED. ASSOC. 2208, 2208 (1990) (arguing non-legal strategies are either unrealistic or cost-prohibitive). Removal of tobacco smoke through ventilation to acceptable levels would be cost-prohibitive and technologically unrealistic. *Id.* Common courtesy, the tactic recommended by the Tobacco Institute, whereby both nonsmokers and smokers are asked to respect each others rights, has proven ineffective. *Id.* Forty-seven percent of adult smokers responding to the 1987 National Health Interview Survey of Cancer Epidemiology said that they smoke inside public places without first asking others. *Id.* at 2208-09. This finding, and others, show that the common courtesy approach by itself is unlikely to protect nonsmokers from ETS. *See also* Repace, *The Problem of Passive Smoking*, 57 BULL. N.Y. ACAD. MED. 939, 939-41 (1981) (discussing impracticality of using ventilation to control exposure to ETS); R. GOODIN, *supra* note 1, at 82 (discussing inadequacy of ventilation systems and existing technology in protecting individuals from ETS exposure).

smoke" seems appropriate.[108] In fact, the absence of a right to smoke in areas shared by nonsmokers has been equated with the absence of a right to engage in Russian roulette.[109] Surgeon General Koop stated "the right of smokers to smoke ends where their behavior affects the health and well-being of others."[110] Smokers can control where and when they smoke; nonsmokers cannot breathe with the same flexibility.

Some commentators suggest that the Constitution affords society the right to breathe clean air.[111] Others posit that "environmental protection" amendments should be added to either the United States Constitution or to state constitutions.[112] The courts, however, have refused to afford constitutional protection to those seeking shelter from passive smoke in public places.[113] The constitutionally-based arguments of those seeking protection from ETS in the workplace also have been repudiated.[114] Ironically, however, courts have been willing to consider ETS exposure in prisons

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108. *See generally* BUREAU OF NATIONAL AFFAIRS, WHERE THERE'S SMOKE: PROBLEMS AND POLICIES CONCERNING SMOKING IN THE WORKPLACE (2d ed. 1987) (concluding that smokers appear to have no legal grounds for claiming constitutional right to smoke in workplace). Courts that have examined whether there is a legal right to smoke have consistently found no such constitutional or statutory right, and have found smokers do not have a right to be treated the same as nonsmokers. *See* Grusendorf v. Oklahoma City, 816 F.2d 539, 543 (10th Cir. 1987) (upholding Oklahoma fire department policy making continued work contingent upon employee's agreement not to smoke even outside workplace).

109. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 27 (implying that individuals are not empowered to expose others to unwarranted risk).

110. INVOLUNTARY SMOKING, *supra* note 11, at xii.

111. *See* A. BRODY & B. BRODY, THE LEGAL RIGHTS OF NONSMOKERS 21, 87-88 (1977) (arguing for constitutional right to breathe clean air). In 1911, the president of the Non-Smokers' Protective League insisted that "[t]he right of each person to breathe and enjoy fresh and pure air—air uncontaminated by unhealthy or disagreeable odors and fumes—is a constitutional right, and cannot be taken away by legislatures or courts, much less by individuals pursuing their own thoughtless or selfish indulgence." R. GOODIN, *supra* note 1, at 66.

112. *See* Reynolds, *supra* note 14, at 454 (proposing state or United States constitutional amendment recognizing right to healthy environment); *see also* Comment, *Where There's Smoke There's Ire: The Search for Legal Paths to Tobacco-Free Air*, 3 COLUM. J. ENVTL. L. 62, 72-75 (1976) (reviewing suggested constitutional sources for right to be free from tobacco smoke).

113. *See* Gasper v. Louisiana Stadium & Exposition Dist., 577 F.2d 897, 898-99 (5th Cir. 1978) (rejecting constitutional protection claims of nonsmokers who alleged violations of first, fifth, ninth, and fourteenth amendments due to physical harm and discomfort caused by smokers while attending indoor stadium events), *cert. denied*, 439 U.S. 1073 (1979).

The chief obstacles for finding a fundamental right to a clean environment are described as (1) the lack of an historical basis for recognizing such a right under the ninth or fourteenth amendments; (2) the lack of decisional standards in the due process clause to aid a court in determining whether environmental rights have been infringed; and (3) judicial lack of expertise needed for the balancing required in deciding environmental issues. Comment, *supra* note 112, at 74 (citing Tanner v. Armco Steel Corp., 340 F. Supp. 532, 536 (S.D. Tex. 1972)).

114. *See* Federal Employees for Non-Smokers' Rights (FENSR) v. United States, 446 F. Supp. 181, 185 (D.D.C. 1978) (rejecting claims of first and fifth amendment violations brought by nonsmoking federal employees seeking to restrict smoking in federal buildings); Kensell v. Oklahoma, 716 F.2d 1350, 1350 (10th Cir. 1983) (rejecting first, fifth, ninth, and fourteenth amendment claims of nonsmoker seeking elimination of smoking in workplace).

as a possible violation of the "cruel and unusual punishment" clause of the eighth amendment.[115]

Common law arguments to protect nonsmokers have been more successful. In workplace environments, for example, courts have recognized a common law right to a safe working environment, including reasonable protection from ETS, and, thereby, have imposed affirmative regulatory requirements on employers to protect workers from the hazard.[116] Also, smoke-sensitive employees have qualified as disabled individuals under the Federal Rehabilitation Act of 1973, although judicial remedies have been denied where employers have attempted to provide workers with relief.[117] In addition, courts have recognized nonsmoker's rights in disability retirement suits[118] and worker's compensation suits.[119]

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115. Avery v. Powell, 695 F. Supp. 632, 636 (D.N.H. 1988). The court recognized that evolving standards of decency in society, coupled with evidence of the hazards of tobacco smoke, leads to the conclusion that involuntary exposure to ETS constitutes unfair punishment. *Id.* at 636-40. *See generally* Comment, *The Constitutionality of an Off-Duty Smoking Ban for Public Employees: Should the State Butt Out?*, 43 VAND. L. REV. 491, 506-07 (1990) (discussing *Avery* and its implications); Note, *Constitutional Law—Prisoners' Rights—Recognition That Involuntary Exposure to Environmental Tobacco Smoke May Constitute Cruel and Unusual Punishment*—Avery v. Powell, 11 CAMPBELL L. REV. 363, 371-76 (1989) (analyzing the court's rationale in *Avery*).

116. *See* Shimp v. New Jersey Bell Tel., 145 N.J. Super. 516, 530-31, 368 A.2d 408, 415-16 (Ch. Div. 1976) (holding employer has obligation to provide employees with safe working conditions including reasonably adequate protection against ETS); Smith v. Western Elec. Co., 643 S.W.2d 10, 13-14 (Mo. Ct. App. 1982) (reversing lower court's dismissal of employee's petition seeking to prohibit employer from exposing him to tobacco smoke at work, and applying *Shimp* to hold that employee has common law right to work in smoke-safe environment). *But see* Gordon v. Raven Sys. & Research, 462 A.2d 10, 15 (D.C. 1983) (rejecting worker's claim that common law imposes affirmative duty on employer to restrict workplace smoking where worker failed to present any scientific evidence of harm from tobacco smoke to nonsmokers in general). It seems unlikely that *Gordon* would be decided the same way today, given the evidence that has developed since the case was heard on the dangers of ETS.

117. Vickers v. Veterans Admin., 549 F. Supp. 85, 89 (W.D. Wash. 1982) (finding plaintiff's smoke sensitivity was handicap, but denying judicial remedy on grounds that employer made reasonable effort to accommodate handicap by creating separate smoking area and installing additional ventilation). *See generally* Repace, *Risks of Passive Smoking*, *supra* note 17, at 16-18 (reviewing ETS-related cases).

118. Pardodi v. Merit Sys. Protection Bd., 690 F.2d 731, 739 (9th Cir. 1982) (concluding court properly awarded disability retirement benefits to asthmatic with hypersensitivity to cigarette smoke when her Federal Government employer failed to provide suitable substitute position in safe, smoke-free work environment).

119. McCarthy v. Department of Social & Health Serv., 46 Wash. App. 125, 133, 730 P.2d 681, 686 (1986) (holding employee with ETS-induced chronic obstructive lung disease could sue employer where injury was not covered by worker's compensation). In California, a worker recently sued the California Compensation Insurance Fund for medical expenses resulting from a heart attack he claims was induced by ETS exposure in a bar where he was employed as a waiter. *Heart Attack Claim May Boost Anti-Smoking Drive*, The Gannett News Service, Dec. 25, 1990. A proposed settlement has been reached between the insurance carrier and the worker's lawyers. *Id.*

The general duty clause of the Occupational Safety and Health Act, 29 U.S.C. § 651 (1988), which imposes a duty on an employer to eliminate all foreseeable and preventable hazards in the workplace, may provide workers another judicial remedy. *See* Action on Smoking and Health, *How to Deal with Workplace Smoking Problems* (Sept. 1989) (suggesting general statutory obligation to provide workers with safeguards against known health risks may be persuasive).

While courts, in an effort to provide remedies to persons with ETS-induced health problems, have applied alternative theories, no judicial solution to the pervasive problem of ETS in the indoor environment has developed.[120] As one court asserted, "the judicial process . . . is particularly ill-suited to solving problems of environmental control."[121] The court posited that such issues remain within the purview of administrative and legislative bodies,[122] as the judicial gap is due to the lack of nationally coordinated legislative efforts protecting the general public from ETS.[123] Thus, uniform judicial protection from the hazards of ETS must result from federal legislative initiatives mandating regulatory response.

B. Legislative Prospects

1. Inadequacy of jurisdiction-specific controls

As evidence of this involuntary health risk to the nonsmoker proliferates, the public tolerance for breathing passive smoke wanes.[124] Surveys illustrate that the public is offended by ETS, and increasingly favors total smoking bans in many public places and drastic restrictions in workplaces and restaurants.[125] Although the root of this intolerance may be attributable more to general annoyance than risk awareness, the nonsmoking public deserves strict protection from the offensive and potentially deadly smoke of others.[126]

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120. *See* Repace, *Risks of Passive Smoking*, *supra* note 17 (suggesting that judicial reluctance to effectuate broad remedies may be due to rarity of ETS hypersensitivity throughout population, social acceptance of smoking, and almost total lack of federal regulation of tobacco or ETS).

121. Gordon v. Raven Sys. Research, 462 A.2d 10, 14 (D.C. 1983) (citing Tanner v. Armco Steel, 340 F. Supp. 532, 536-37 (S.D. Tex. 1972)).

122. *Tanner*, 340 F. Supp. at 536 (considering need to balance divergent social interests and apply scientific expertise in environmental regulatory issues as justification for judicial abstinence).

123. *See* 25 YEARS OF PROGRESS, *supra* note 9, at 557 (documenting that government has not regulated smoking in wide variety of public places).

124. *See* 25 YEARS OF PROGRESS, *supra* note 9, at 224 (documenting how population has become increasingly opposed to ETS since 1964). In 1987, a Gallup survey showed that "77% of adults (64% of smokers and 86% of nonsmokers) thought that smokers should not smoke in front of others." *Id.* Another 1987 survey, conducted for the American Medical Association, found that 76% of its respondents, 49% of whom were smokers and 86% of whom were nonsmokers, believed that nonsmokers had the right to a smoke-free environment. *Id.* Only 10%, 25% of whom were smokers and 5% of whom were nonsmokers, felt that smokers had the right to smoke anywhere. *Id.*

125. 25 YEARS OF PROGRESS, *supra* note 9, at 224-39. A 1988 Gallup survey showed that 60% of respondents favored a total ban on smoking in public places. *Id.* at 233. A mere 16% favored such a ban in 1978. *Id.* at 232. A 1987 Gallup survey showed that 74% of adults felt that separate smoking and nonsmoking sections should exist in restaurants and 17% felt smoking should be banned completely. *Id.* at 235. A 1985 Gallup poll showed that 87% of adults thought that companies should have workplace smoking policies and 79% felt that smokers should be separated from nonsmokers in the workplace. *Id.* at 232.

126. *See supra* note 125 and accompanying text (citing statistics of public perception of rights of smokers in public areas).

To date, no federal agency has exclusive jurisdiction over ensuring clean air in all public indoor environments.[127] As a result of this federal regulatory gap, responsibility for protecting the public from the perils of ETS has fallen upon state and local governments. The resultant state laws generally include provisions protecting nonsmokers from workplace discrimination, providing leniency to nonsmokers in disagreements over smoking sections, and granting localities broad power to enact more stringent ordinances.[128] Local ordinances are generally more restrictive than their state counterparts.[129] Local ordinances generally restrict or ban smoking in most public places, including restaurants, and public and private worksites.[130] The courts sanction state and local efforts to protect the public from a deadly health risk as legitimate exercises of state police power.[131] While states and localities affirmatively acknowledge the dangers of ETS by restricting smoking in various public areas,[132]

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127. *See Health Effects*, *supra* note 43, at 93-94 (statement of Thomas Godar, M.D., American Lung Association) (describing state of current federal jurisdiction over indoor air pollution).

A variety of federal agencies have restricted authority. The EPA, under the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601-2671 (1988), has authority to control or limit the manufacture of hazardous chemicals. Regulation of tobacco products, however, is explicitly proscribed under TSCA. 15 U.S.C. § 2602(2)(B)(iii) (1988). The Occupational Safety and Health Administration is responsible, under the Occupational Safety and Health Act, 29 U.S.C. § 651 (1988), to ensure a healthful workplace. Although NIOSH, a component of OSHA recently acknowledged the health effects of ETS on workers and announced plans to commence gathering ETS information, OSHA has not interpreted the act as ensuring healthful air quality at the workplace. *Health Effects*, *supra* note 43, at 94. *See* ENVIRONMENTAL TOBACCO SMOKE IN THE WORKPLACE, *supra* note 11, at 11-12 (encouraging workplace passive smoker protection). The Department of Energy, while responsible for energy conservation in homes and new buildings, has limited its jurisdiction to energy concerns. *Id.* The Consumer Products Safety Commission, under the Consumer Product Safety Act, 15 U.S.C. § 2051 (1988), is charged with protecting the nation's consumers from unreasonable risks of injury, which may include health effects associated with contaminant emissions that affect indoor air quality. The Department of Health and Human Services, under the Public Health Services Act, 42 U.S.C. § 242(b) (1988), conducts research and other activities related to the causes, diagnosis, treatment, control, and prevention of disease. Finally, SARA creates federal jurisdiction for the research of indoor air problems, but not regulation. 42 U.S.C. § 7401(b)(2).

128. *See* 25 YEARS OF PROGRESS, *supra* note 9, at 560 (reviewing typical provisions in recently enacted state laws).

129. *Id.* at 570.

130. *Id.* Approximately 400 local communities have enacted public place smoking restrictions. *Id.*

131. *See* Rossie v. State Dep't of Revenue, 133 Wis. 2d 341, 350, 395 N.W.2d 801, 806-07 (Ct. App. 1986) (holding that statute banning smoking in public buildings except for designated smoking areas did not deny smoker equal protection of law); Alford v. Newport News, 220 Va. 584, 586, 260 S.E.2d 241, 243 (1979) (noting that ordinance limiting smoking in restaurants was designed to protect nonsmoking public from toxic effect of smoke and was within legislative domain).

132. *See* 25 YEARS OF PROGRESS, *supra* note 9, at 557-60, 69-72 (reviewing scope of current state and local smoking restrictions). As awareness of the health hazards of smoking and passive smoking grew during the 1960s and 1970s, state and local laws, originally enacted as fire prevention measures, developed into health and safety legislation. *Id.* at 557-58. Between 1970 and 1979, 24 states enacted smoking restrictions. *Id.* at 558. Most notable was

ordinances are divergent and inconsistent in scope.[133] Consistent protection from ETS exposure, therefore, is not guaranteed across state or local borders.

2. *The passive federal effort*

While the Federal Government has not acted on a national scale to regulate general exposure to ETS, it has imposed limited restrictions in the federal workplace and in some public facilities. In 1986, the General Services Administration (GSA) issued regulations restricting individuals from smoking in GSA controlled buildings.[134] The regulations recognize the nonsmokers' right and need for protection from the offensive smoke of others. The legislation, however, is limited in scope and, arguably, inadequate because it permits smoking in areas shared by both smokers and nonsmokers.[135] The Secretary of Health and Human Services, recog-

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the comprehensive Minnesota Clean Air Act, MINN. STAT. ANN. § 144.414 (West Supp. 1988), which became a benchmark for other state laws. 25 YEARS OF PROGRESS, *supra* note 9, at 558. This legislation limited smoking in public places, including private and public worksites, to designated smoking areas. *Id.* By 1985, 41 states and the District of Columbia had smoking bans regulating smoking in at least one public place. *Id.* at 569. Following the 1986 reports of the National Research Council and the Surgeon General on the health impacts of ETS, 20 states enacted new public smoking restrictions. *Id.* By 1987, smoking was restricted in at least one public place in 42 states and the District of Columbia. *Id.* As of January 1988, over 82% of the United States population resided in states that restricted smoking in at least one public place. *Id.*; *see also* INVOLUNTARY SMOKING, *supra* note 11, at 266-77 (providing comprehensive overview of state and local smoking restrictions); Comment, *The Legal Conflict Between Smokers and Nonsmokers: The Majestic Vice Versus the Right to Clean Air*, 45 MO. L. REV. 444, 450-59 (1980) (reviewing Minnesota law and similar statutes).

133. *See* A. BRODY & B. BRODY, *supra* note 111, at 106 (recognizing disparity in state and local legislation and describing it as of "patchwork quality"). As a possible solution, one authority proposed a model state smoking statute. *Id.* at 107-16; *see also* Reynolds, *supra* note 14, at 446-47 (citing inconsistencies in state and local statutes); *see, e.g.*, D.C. CODE ANN. § 6-913 (1989 and Supp. 1991) (requiring private and public employers to designate specific smoking areas in workplaces); PA. STAT. ANN. tit. 35, § 1230.1 (Purdon Supp. 1990) (controlling smoking in certain public places, meetings, and work areas); N.Y. PUB. HEALTH LAW § 1399-0 (McKinney 1990) (prohibiting smoking in specific public areas); CAL. HEALTH AND SAFETY CODE § 25948 (West Supp. 1990) (eliminating smoking on public transportation vehicles).

134. 41 C.F.R. § 101-20.105-3 (1990). The preamble to the GSA regulations recognizes the adverse effects of passive smoke and justifies the regulations as necessary to protect the health of nonsmoking federal employees and public building visitors. 51 Fed. Reg. 44,258 (1986) (codified at 41 C.F.R. §§ 101-120). It identifies their "right not to be exposed involuntarily to secondhand tobacco smoke at the Federal work site." *Id.* The purpose of the regulations is to provide a "reasonably smoke-free environment in certain areas" of GSA-administered buildings. OFFICE OF TECHNOLOGY ASSESSMENT, PASSIVE SMOKING IN THE WORKPLACE: SELECTED ISSUES 31 (1986) [hereinafter PASSIVE SMOKING].

The GSA controlled 34% of all federal office space in 1983. *Id.* at 30. The Department of Defense and the Postal Service controlled the remainder of federal office space. *Id.* In addition, the Veterans Administration (VA) developed smoking regulations for 172 VA medical centers and 225 clinics. *Id.*

135. *See* PASSIVE SMOKING, *supra* note 134, at 32 (explaining that smoking in open office areas is point of contention). The regulations acknowledge involuntary smoking as a health hazard to nonsmokers. *Id.* at 31-32. They prohibit smoking in auditoriums, classrooms, con-

nizing the deficiency of existing regulations, recently recommended that President Bush issue an order banning smoking in all federal executive branch agencies and buildings.[136] The Department of Defense, Postal Service, and Veterans Administration have also implemented workplace smoking restrictions.[137] While such restrictions indicate a growing awareness within the Federal Government of the health dangers of ETS, they also illustrate the deficient status of current efforts. They acknowledge the problem, but the limited scope of these restrictions fails to confront the national health danger.

The domestic airline flight smoking ban is illustrative and characteristic. As of February 25, 1989, pursuant to an act of Congress, smoking is prohibited on over ninety-nine percent of all United States domestic airline flights.[138] The action came in response to evidence that continued exposure to ETS on flights scheduled for two hours or more would be fatal to approximately 15 cabin crew members and between 42 and 440 passengers per year.[139] Studies performed for the Department of Transportation concluded that, given the hazards of ETS exposure, a total ban on smoking would provide the greatest benefit at the least cost.[140] In smoking sections, the level of ETS exposure exceeded the National Ambient Air Quality Standards' (NAAQS) primary and secondary air pollution levels, which, if outdoors, would generate an air pollution emergency.[141] The studies indicated that similar or greater risks exist for international flights, but under pressure from the tobacco industry,

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ference rooms, elevators, medical facilities, libraries, and hazardous areas. *Id.* at 32. In addition, the regulations ban smoking in open office space shared by smokers and nonsmokers, except when the space is large enough and sufficiently ventilated to limit involuntary exposure to ETS. *Id.* at 34. *See* INVOLUNTARY SMOKING, *supra* note 11, at 12-13 (discussing Surgeon General's determination that mere separation of smokers and nonsmokers in same airspace is inadequate to protect nonsmokers from hazards of ETS).

136. *Sullivan Proposes Executive Branch Smoking Ban*, Wash. Post, Mar. 23, 1991, at A10, col. 1. Unlike existing regulations, the proposal of Louis W. Sullivan, Secretary of Health and Human Services, would not allow any designated smoking areas in such buildings. *Id.* The order, however, would not apply to the legislative or judicial branches of the government. *Id.*

137. *See* PASSIVE SMOKING, *supra* note 134, at 33-38 (summarizing workplace smoking restrictions at Department of Defense, Postal Service, and Veterans Administration which seek to separate smoker and nonsmoker by establishing designated smoking areas in buildings).

138. Department of Transp. and Related Agencies Appropriations Act of 1989, 101 Pub. L. No. 101-164, 103 Stat. 1069 (1989). This statute permanently amended 404(d)(1) of the Federal Aviation Act of 1958, 49 U.S.C. App. § 1374(d)(1) (1988).

139. *The New Airline Smoking Ban: New Report Documents Deadly Problem*, ASH SMOKING AND HEALTH REV. (Action on Smoking and Health, Washington, D.C.), at 3 (Feb. 1990) [hereinafter *The New Airline Smoking Ban*]. These figures were based on studies showing that 120 to 150, 2.7 to 8.3, and 0.8 to 1.1 excess deaths per million of cabin crew members, business passengers, and casual passengers, respectively, would result annually. *Id.*

140. *Id.*

141. *Id.*; *see* 42 U.S.C. § 7410 (1988) (authorizing establishment of National Ambient Air Quality Standards).

Congress refused to extend the regulations to overseas flights.[142] The courts affirmed these federal actions as legitimate governmental efforts to protect the public health.[143]

Less successful congressional efforts over the past five years reflect at least an awareness of the need to examine the indoor air pollution dilemma in general and the ETS danger in particular. Several bills, none of which have become law, proposed to restrict smoking to designated areas in all United States government buildings.[144] Another defeated measure attempted to restrict smoking on all domestic, interstate public conveyances.[145] One recent bill, however, explicitly acknowledged the ETS risk reality and called for an affirmative legislative response.[146] Perhaps inspired by the EPA's recent draft reports, this legislation would have cancelled the tobacco products exemption under the Toxic Substances Control Act (TSCA), and specifically authorized the EPA to regulate tobacco for what it is, a high-risk toxic substance.[147] Most federal legislative acknowledgements of the broad indoor air pollution problem, however, merely encourage federal agency research of the problem; the most recent legislative proposal, however, does contain a regulatory

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142. *The New Airline Smoking Ban, supra* note 139, at 3.

143. *See* Diefenthal v. Civil Aeronautics Bd., 681 F.2d 1039, 1044 (5th Cir. 1982) (holding Civil Aeronautics Board (CAB) did not exceed its statutory authority by requiring nonsmoking sections on airlines); Action on Smoking & Health v. Civil Aeronautics Bd., 699 F.2d 1209, 1212-14 (D.C. Cir. 1983) (upholding CAB authority to regulate smoking on airlines pursuant to Federal Aviation Act language requiring CAB to provide "adequate service"); National Ass'n of Motor Bus Owners v. United States, 370 F. Supp. 408, 417 (D.D.C. 1974) (upholding Interstate Commerce Commission regulation prohibiting smoking in 80% of seats on buses traveling in interstate commerce).

144. Non-Smokers' Rights Act of 1985, S. 1440, 99th Cong., 1st Sess. (1985); Non-Smokers' Rights Act of 1986, H.R. 4546, 99th Cong., 2d Sess. (1986); Nonsmokers' Health Protection Act of 1987, H.R. 1008, 100th Cong., 1st Sess. (1987).

145. *See* Public Protection from Passive Smoke Act, S. 655, 101st Cong., 1st Sess. (1989) (proposing to amend Public Health Service Act to require certification from public conveyances that passengers are not involuntarily subjected to passive smoke).

146. *See* The Equal Treatment for Cigarettes Act of 1990, H.R. 5208, 101st Cong., 2d Sess. (1990) (proposing to amend Toxic Substances Control Act to give EPA authority to regulate tobacco products). The sponsor, former Congressman Thomas Luken of Ohio, argued for the amendment by referring to the 1986 Surgeon General's report on passive smoking. 136 CONG. REC. E2223-24 (daily ed. June 28, 1990) (statement of Rep. Luken). He stated "[t]here is no reason why the tobacco companies should continue to be shielded from a law that regulates all other chemical substances and mixtures." *Id.* at E2223. "[U]nder current law, EPA can do nothing about this dangerous product." *Id.* The Act would not prohibit the manufacturing or marketing of tobacco products, but would provide the Federal Government with the capacity to regulate the use of tobacco as a toxic substance. *Id.* Tobacco products are currently exempt from EPA regulation under TSCA. 15 U.S.C. § 2602(2)(B)(iii) (1988).

147. H.R. 5208, 101st Cong., 2d Sess. (1990). *See generally* O'Reilly, *A Consistent Ethic of Safety Regulation: The Case for Improving Regulation of Tobacco Products*, 3 ADMIN. L.J. 215, 236-39 (1989) (citing TSCA as regulatory option for regulation of tobacco products given law's purpose of mitigating adverse human health effects from exposure to toxic substances).

component.[148]

Although the texts and legislative histories of recently proposed bills reflect an informed recognition of the risks created by passive smoke in particular and indoor air pollution in general, the narrow scope of the efforts and their failure to become law reflect the current federal aversion to nationwide regulation of this glaring health risk. Political pressure by the tobacco industry, which would bear the greatest economic loss from large-scale smoking restrictions, is a central reason for this federal legislative stagnation.[149] The personal and historically acceptable nature of the risk source and resultant societal misperception of the risk presents another significant reason for the inaction.[150] Where Congress has acted, it has done so on a limited scale, choosing to act like a state or locality in assuming jurisdiction over only its most immediate domain, its own federal facilities. More commonly, however, in deference to the growing evidence about ETS exposure, congressional members propose measures to further investigate and assess the problem. Measures endorsing further study, or at most, minimal and local protection, are merely token gestures. Designed to placate the very sources of the evil, the tobacco lobby and the smoking public, the

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148. As reported from the subcommittee on Environment of the House Committee on Science, Space, and Technology, H.R. 1066, the Indoor Air Quality Act of 1991 authorizes the Secretary of Labor to issue standards within two years pursuant to section 6 of the Occupational Safety and Health Act, 29 U.S.C. § 655 (1990), to regulate indoor air quality "to protect the health and safety of employees exposed to a variety of indoor air pollution in the workplace." H.R. 1066, 102d Cong., 1st Sess. § 15 (1991). These standards are to include a written program for indoor air pollution control, worksite assessments, and building performance studies designed to minimize workplace exposure to indoor air contaminants. *Id.* The bill also acknowledges the relationship between indoor and outdoor air pollution, stating that "the [EPA] Administrator shall, where appropriate, consider indoor human exposure to a contaminant in the development of ambient air quality standards under section 109 and national emission standards for hazardous air pollutants under section 112 of the Clean Air Act." *Id.* § 5(d). The bill would also establish an Office of Indoor Air Quality within the Office of Air and Radiation at the EPA, whose function would be to coordinate and implement indoor air quality efforts under federal statutes and programs. *Id.* § 11. The Senate companion bill proposes similar measures. S. 455, 102d Cong., 1st Sess. (1991).

149. *See* Wall St. J., July 17, 1990, at 1, col. 5 (describing increased attention given to workplace smoking restrictions in states where nonsmoker advocates are stronger than tobacco lobby). The strong tobacco lobby, headed by the Tobacco Institute, has been cited as a predominant reason why the majority of smoking regulations to date emanate from state and local government efforts. *Id.*

The Tobacco Institute has criticized the recent EPA passive smoke risk assessment as "speculation without an adequate scientific foundation." Boston Herald, June 26, 1990, at 8, col. 1. It predicted that the EPA's scientific advisory board would not uphold the findings. *Id.* The Institute asserted that the studies used by the EPA in the risk assessment ignored other factors attributable to lung disease, such as occupation and lifestyle. *Id.* Although the science advisory board ultimately upheld the EPA's findings, the Tobacco Institute continues to challenge the studies.

150. Note, *Nonsmokers' Rights*, 26 J. URBAN & CONTEMP. L. 211, 211-12 (1984) (recognizing "traditional acceptance" of tobacco smoking as reason for legislative stagnation in regulating smoking).

proposed measures only perpetuate the problem.[151]

3. Legislative impediments: An untenable excuse

While outdoor air constituents are vigorously regulated by the EPA through the Clean Air Act,[152] regulation of tobacco products, and, consequently, their deadly emissions, is specifically proscribed under the Federal Hazardous Substances Act, the Consumer Product Safety Act, the Fair Packaging and Labeling Act, the Controlled Substances Act, and the Toxic Substances Control Act—an unfortunate legacy of the tobacco lobby.[153] Moreover, federal ETS control has not even occurred under those laws which are not preclusive.[154] Thus, while various federal agencies, including the Occupational

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151. *See supra* note 13 and accompanying text (discussing goal of tobacco lobby). The position of the tobacco lobby, as gleaned from THE TOBACCO OBSERVER, the lobby's major news periodical, is that smokers have a right to smoke free from regulation and that the relationship between smoking and disease cannot be proved, given the existing information. Repace, *Risks of Passive Smoking*, *supra* note 17, at 10-11.

152. *See* Clean Air Act, 42 U.S.C. § 7401(b)(1) (1988) (attempting "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population").

153. Federal Hazardous Substances Act, 15 U.S.C. § 1261(f)(2) (1988); Consumer Product Safety Act, 15 U.S.C. § 2052(B) (1988); Fair Packaging and Labeling Act, 15 U.S.C. § 1459(a)(1) (1988); Controlled Substances Act, 21 U.S.C. § 802(6) (1988); Toxic Substances Control Act, 15 U.S.C. § 2602(2)(B)(iii). *See generally* Repace, *Risks of Passive Smoking*, *supra* note 17, at 941 (reviewing regulation of tobacco products).

154. *See* 25 YEARS OF PROGRESS, *supra* note 9, at 613 (stating that while Clean Air Act, 42 U.S.C. § 7412 (1988), requires EPA to regulate airborne pollutants and EPA has in fact regulated constituents of ETS, such as carbon monoxide and nitrogen dioxide, EPA has interpreted statute to apply only to outdoor air). It is suggested that section 112 of the Act, which calls for regulation of pollutants which may "reasonably be anticipated to result in an increase in mortality or an increase in incapacitating reversible illness," should be construed to encompass indoor air. Repace, *Risks of Passive Smoking*, *supra* note 17, at 19. The EPA calls its limitation to outdoor air an "historical interpretation." *Id.* at 19. As a result of this interpretation, federal programs directed at controlling indoor air pollutants are limited to *ad hoc*, uncoordinated efforts. Examples of this are asbestos and radon by the EPA and formaldehyde by the Consumer Products Safety Commission. UNITED STATES ENVTL. PROTECTION AGENCY, 1 REPORT TO CONGRESS ON INDOOR AIR QUALITY 1-2 (1989) (describing background of Clean Air Act).

Although the Occupational Safety and Health Act gives OSHA direct authority to regulate ETS-type constituents, it has failed to do so. *See supra* note 11 (discussing OSHA's recent acknowledgment of ETS cancer risk). In 1989, Action on Smoking and Health filed suit against OSHA in an attempt to oblige the agency to prohibit smoking in the workplace. Wash. Post, Jan. 7, 1991, at A13, col. 3. In response, OSHA announced plans to commence information gathering to determine whether or not ETS should be regulated as a workplace hazard. *Id.* Charles James, an attorney of the United States Department of Labor, stated that "[a] request for information is the first step in the process for evaluating workplace air quality issues, including Environmental Tobacco Smoke, and determining whether the agency should promulgate a standard." *Id.* On May 10, 1991, however, the Court of Appeals for the District of Columbia rejected ASH's petition that sought review of OSHA's decision not to issue an emergency temporary standard banning tobacco smoking in the workplace. Action on Smoking and Health v. OSHA, 59 U.S.L.W. 2728, 2728 (D.C. June 4, 1991) (No. 89-1656) (stating that OSHA can authorize emergency standard only if it reasonably determines that "employees are exposed to grave danger" from toxic substance in workplace and emergency standard is "necessary" to protect workers from that danger). The court further stated that "we believe that OSHA reasonably determined that it could not at this time sufficiently quantify the

Safety and Health Administration, have current jurisdiction to act upon the regulatory void, they have conspicuously failed to do so.[155] Consequently, legislative and regulatory gaps remain, perpetuating the current paucity of federal ETS control.[156]

V. A SOLUTION TO THE PARADOXES

A. A Resolution of the Public Perception Paradox

The absence of federal ETS regulation epitomizes the Federal Government's failure to regulate comparable risks consistently. This regulatory paradox emanates in part from environmental policy priorities reflecting false societal perceptions of risk, rather than scientific risk realities.[157] Logically, the first step toward termination of this paradox of perception is to reconcile risk realities with societal concern.[158] The EPA recently recognized that the fulfillment of these objectives is essential to a concomitant reconciliation of relative risks with federal regulatory priorities.[159] Thus, the EPA should first reformulate its budgetary priorities to better reflect risk realities such as those from indoor air pollutants like ETS, and simultaneously educate the public about the foundation of its revamped regulatory strategy. This two-tiered scheme will ensure that limited EPA resources are utilized to provide maximum health protection from the most dangerous environmental risks in a legitimate and efficacious manner.

B. A Resolution of the Regulatory Paradox

The EPA should regulate environmental tobacco smoke for what it is, a toxic air pollutant posing a cancerous health risk of magnitudes beyond the acceptable risk thresholds established by regulatory agencies.[160] Section 112 of the Clean Air Act authorizes the

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degree of risk associated with workplace exposure to ambient tobacco smoke to justify issuing an emergency temporary standard." *Id.*

155. *See supra* notes 119-27 and accompanying text (documenting popular support for ETS regulation and describing state of current federal jurisdiction over indoor air pollution).

156. *See supra* note 127 and accompanying text (citing recent announcement by OSHA that it will soon commence information gathering on ETS issue); *supra* notes 144-46 and accompanying text (discussing scope of congressional recognition of ETS hazard).

157. *See* UNFINISHED BUSINESS, *supra* note 4, at 95 (discussing EPA reluctance to take action concerning high risk of indoor air pollution).

158. *See id.* (identifying EPA inconsistencies in setting priorities, regarding public perception of risk and risk reality); *id.* at 95-100 (discussing factors such as involuntary nature of risk that tend to engender public exaggeration of risk).

159. *See* REDUCING RISK, *supra* note 3, at 20, 24 (delineating budgetary realignment and public education as two central components of policy reformulation effort in order to narrow gap between public perception of risk and scientifically-substantiated risk reality).

160. *See supra* notes 97-104 and accompanying text (comparing documented ETS cancer risk with acceptable risk thresholds established by EPA).

EPA to issue national uniform health-protective standards for life-threatening stationary hazardous air pollution risks emanating from the activities of others.[161] ETS, like other hazardous air pollutants delineated by Congress for EPA regulation, emanates from human activity and presents an unacceptable involuntary risk to those exposed. Unlike these outdoor air pollutants, however, ETS has not been deemed ripe for regulation by Congress or EPA.[162]

Ideally, environmental health risk abatement legislation and regulation would rid society of the "moral evils" of all environmental risk.[163] Yet, economic, regulatory, and political realities and paradoxes frequently impede the journey to this ideal end.[164] For example, Congress designed the original section 112 of the Clean Air Act to protect the public from life-threatening toxic air pollution.[165] EPA and the courts, however, interpret this provision to mean that only toxic air pollutants presenting a "significant" risk to the public demand regulation.[166] Moreover, once a significant risk pollutant is mitigated to an "acceptable" threshold, cost and technological considerations become a justification for limiting additional risk abatement activity.[167] As previously discussed, the new section 112 of the Clean Air Act Amendments of 1990 adopts an analogous approach.[168]

Clearly, the threat from ETS is "significant" under the threshold standards for toxic pollutants established to justify federal regula-

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161. *See supra* notes 84-85 and accompanying text (discussing legislative authority of Clean Air Act and its regulatory scope).

162. *See* 42 U.S.C.A. § 7412(b) (Supp. 1991) (authorizing comprehensive regulation of outdoor air, including 189 specified hazardous air pollutants); *supra* note 127 and accompanying text (discussing gap in federal regulatory process for combatting indoor air pollution).

163. *See* Sagoff, *Federal Pollution Control Law*, *supra* note 27, at 24 (placing pollution control legislation in "long tradition of humanitarian legislation intended to ameliorate man's inhumanity to man."); *id.* at 79 (describing regulatory control of toxic pollutants as standing "squarely in the tradition of legislation that seeks to control and eliminate moral evils"); *see also* Schroeder, *supra* note 28, at 505 (stating that many believe environmental regulations impose values that should not be tempered by cost-benefit considerations).

164. *See* Sagoff, *Federal Pollution Control Law*, *supra* note 27, at 79 (stating that pollution "must be tolerated, at least to some extent, if indispensable economic activity is to continue and flourish").

165. *See supra* note 72 and accompanying text (discussing EPA interpretation of section 112 that hazardous air pollutants should be reduced to "ample margin of safety to protect public health").

166. *See* NRDC v. EPA, 824 F.2d 1146, 1153 (D.C. Cir. 1987) (sanctioning EPA's interpretation of section 112 to require reduction of significant risks only). *But see* Graham, *supra* note 73, at 108 (criticizing ambiguous and overambitious legislative language of section 112 as source of EPA's reluctance to regulate cancer risks at no-threshold level); *id.* at 130 (discussing how some commentators interpret section 112 as rejecting cost considerations in risk regulation).

167. *See supra* notes 76-83 and accompanying text (citing *National Resources Defense Council* and regulations from decision as well as justifications for *de minimis* risk analysis).

168. *See supra* notes 84-85 and accompanying text (discussing provisions of amended section 112 of Clean Air Amendments of 1990, 42 U.S.C.A. § 7412 (Supp. 1991).

tory action.[169] Thus, ETS in the indoor environment should be considered a hazardous air pollution source under the Clean Air Act with risks similar, if not greater, to those currently requiring mitigation through application of maximum available control technology (MACT) under section 112 of the amended Clean Air Act.[170] Technology-based controls and ETS are incommensurates, however. The MACT applicable to ETS in public indoor air is complete termination of the pollution source;[171] ventilation mechanisms or structural alterations are costly and insufficient.[172]

Moreover, without source termination, an "adequate margin of safety" cannot realistically be ensured.[173] ETS is potentially ubiquitous in all indoor air spaces.[174] Considering that the public spends ninety percent of its day indoors, individuals may be exposed to it at various and indeterminate times during the day. While the actual ETS sources, the smokers, may fluctuate, the hazardous air constituents remain constant. Unlike many stationary outdoor air pollutants such as smokestack emissions, ETS cannot be constantly monitored due to its potential presence in all public places. Thus, a one in one million (10^{-6}) "safe" risk level cannot be ensured.[175] A national ban

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169. *See supra* notes 18-20 and accompanying text (examining parameters of acceptable risk).

170. *See* 42 U.S.C.A. § 7412(d) (Supp. 1991) (requiring major sources of hazardous air pollutants to be controlled to "the maximum degree of reduction in emissions . . . that the Administrator, taking into consideration the cost of achieving such emission reduction . . . determines is achievable"). Major sources are defined by the Act as stationary sources which emit or have the potential to emit 10 tons per year of hazardous air pollutants into the ambient air. *Id.* The "major source" requirement of 10 tons per year should not apply to ETS emissions, given the potentially constant and indeterminate quantity of emissions. *See id.* § 7412(a)(1) (authorizing the EPA Administrator to establish a "lesser quantity . . . for a major source . . . on the basis of the potency of the air pollutant, persistence, . . . or other relevant factors).

171. *See* A. BRODY & B. BRODY, *supra* note 111, at 119 (defining "public place" for purpose of federal smoking ban as places of public accommodation, workplaces, businesses involved in interstate commerce, and federally-financed buildings).

172. *See* INVOLUNTARY SMOKING, *supra* note 11, at 13 (recognizing inadequacy of ventilation and physical separation measures).

173. *See* 42 U.S.C.A. § 7412(d), (f)(2) (Supp. 1991) (authorizing hazardous air pollutants to be regulated under section 112 in a manner consistent with policy set forth in *National Resources Defense Council*, 824 F.2d 1146 (D.C. Cir. 1987), and in Agency's rulemaking on emissions for benzene, 54 Fed. Reg. 38,044 (1989)); *id.* (stating that Clean Air Act now establishes safe level of exposure to pollutant by considering health factors prior to considering cost, feasibility, and other factors by setting "ample margin of safety"); INVOLUNTARY SMOKING, *supra* note 11, at 13 (quoting former Surgeon General of United States, C. Everett Koop, as stating "the simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, the exposure of nonsmokers to environmental tobacco smoke").

174. *See* Repace, *Risks of Passive Smoking*, *supra* note 17, at 19 (discussing fact that overwhelming majority of public spends its day in ETS contaminated atmosphere).

175. *See id.* (describing passive smoke as "pandemic" in nature); 42 U.S.C.A. § 7412(f)(2)(A) (Supp. 1991) (establishing 10^{-6} risk level as threshold of acceptability for hazardous air pollutants).

on ETS pollution in areas of public access and employment, therefore, should be established under section 112 to minimize the risk from outdoor hazardous air pollutants; only through complete termination of ETS emissions can "acceptable" levels of risk be achieved.[176]

Accordingly, Congress should enact the *Clean Air Act Nonsmokers' Protection Amendments*, amending section 112 of the Clean Air Act to include ETS as a delineated hazardous air pollutant, characterizing public indoor environments as sources of ETS pollution, and compelling the EPA to order and enforce a complete ban of ETS in all public indoor environments.[177] EPA should implement the amendments by declaring a national zero-level ETS emission standard in public indoor air environments, proscribing smoking in all public indoor premises.[178] While enforcement responsibility would initially lie with the owners or operators of the public facility, a "Nonsmokers Protection Hotline" should be established by EPA to receive grievances from citizens illegally subjected to ETS. EPA should place enforcement officers at those facilities for which frequent complaints are received. No smoking signs should also be conspicuously posted in all regulated facilities, stating the ban and outlining the details of the ETS hazard. The enforcement procedures of section 113 of the Clean Air Act would also apply whereby illegal smokers would be subject to the Act's criminal enforcement provisions, as knowing emitters of hazardous air pollution.[179] Clearly, the smoker, and not the facility, should be considered the emission source for enforcement purposes. Only through completely prohibiting ETS can the EPA ensure that "an ample margin of safety to protect the public health" from ETS exposure exists.[180]

Although an analogous restriction on outdoor pollutants would go far beyond prudent cost-benefit analysis, a federal ban on ETS

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176. *See* R. GOODIN, *supra* note 1, at 87-88 (recommending legislative smoking bans to effect ETS protection). *But see* Rabin, *Some Thoughts on Smoking Regulation*, 43 STAN. L. REV. 475, 486 (1991) (criticizing Goodin's scientific evidence-based rationale for no-smoking legislation as unjustified).

177. *See* 42 U.S.C.A. § 7412(b) (Supp. 1991) (delineating list of hazardous air pollutants).

178. A "public" place, for purposes of the enactment, should be defined as all public and private workplaces, all indoor spaces of businesses engaged in interstate commerce, and all other indoor environments open to the general public, including entertainment facilities, shopping areas, and medical treatment facilities.

179. *See* 42 U.S.C.A. § 7413(c)(1) (Supp. 1991) (providing that "any person who knowingly violates . . . section 7412 of this title . . . shall, upon conviction, be punished by a fine pursuant to title 18, or by imprisonment for not to exceed 5 years, or both"). While enforcement will inevitably be challenging, recognition of the danger will encourage those exposed to inform local authorities and EPA of violations.

180. *See* 42 U.S.C.A. § 7412(f)(2) (Supp. 1991) (authorizing reduction of cancer risk from hazardous air pollutants to levels below one in one million (10^{-6}) where such levels cannot be achieved through application of maximum achievable control technology).

pollution in indoor public places would not for two reasons. First, cost considerations justifying environmental pollution risk reduction, rather than risk elimination, are not applicable to ETS regulation efforts because it is impossible to achieve acceptable levels of ETS exposure in public areas.[181] Second, the risk source, the smoker, is still free to smoke in the private home and the outdoor environment.[182] Indeed, tobacco smoke would not be banned, only the public's indoor exposure to its deadly emissions. The resultant federal action would protect the public on a national and uniform level from an imperiling health risk, while eliminating the statutory and regulatory paradox that defines the ETS risk today.

CONCLUSION

Perhaps the point is moot. On the one hand, some may argue that legislative and regulatory priority assessment and criticism are futile and naive in the context of environmental law. These commentators maintain that environmental protection is not the product of scientific reality and amorphous mathematical risk assessment, but rather of societal perception, democratic articulation, and political response. Congressional legislation and EPA regulation must be primarily responsive to societal will, not alleged scientific truth. For example, the first Earth Day in 1970 was the product of mass appeal, not scientific revelation. After all, the risk assessment process is imprecise and uncertain. If error is inevitable, limited resources should be allocated to appease publicly-feared risks first, and more significant risks later, if the two are incongruous.

This rationale, however, cannot be accepted in light of the environmental health risks confronting society today. Meaningful environmental regulation demands a redirection of priorities and resources focusing on risk protection. Certainly, the legitimacy of such activity depends upon public awareness and acknowledgment that current regulatory activity is often more cosmetic than effectual. However, a reformulated societal consensus on environmental risk priorities can only be developed through a Federal Government initiative to educate the public on health risks.

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181. *See* Industrial Union Dep't, AFL-CIO v. American Petroleum Inst., 448 U.S. 607, 607 (1980) (declaring that "safe" does not mean "risk free"); *see also supra* note 18 and accompanying text (discussing justifications for cost-benefit analysis and "significant" risk regulation).

182. Although risk from at-home exposure to ETS parallels those discussed, issues of private home ETS regulation implicate constitutional privacy issues and are beyond the scope of this Comment. *See generally* 25 YEARS OF PROGRESS, *supra* note 9 (noting that no risk assessments have been performed for the health threat from ETS in outdoor ambient air).

The dearth of federal ETS regulation illuminates the current state of environmental protection. ETS presents a significant health risk to the public that is substantiated by scientific evidence. The EPA, the federal agency granted primary authority for protecting human health from environmental pollutants, concurs that ETS is a significant risk to the public health. Unlike risks of similar or lesser magnitude, however, ETS remains uncontrolled. Thus, the regulatory paradox: the failure of federal regulatory and legislative bodies to regulate ETS contradicts the risk regulation standards defining the federal regulatory process.[183]

To terminate the paradox, regulation of risks such as those imposed by ETS must result from objective scientific reality and logical policy choices, not value-laden judgments.[184] Indeed, internal EPA review of its priorities and mission reflects a growing awareness within the regulatory and scientific community that existing regulatory paradoxes must be addressed and resolved if legitimate and effective environmental protection is to be achieved. Therefore, the EPA should ban ETS as a toxic air pollutant in all public areas to make an involuntary health risk truly preventable.

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183. *See Thumbs on the Scales of Risk?*, *supra* note 16 at G3, col. 3 (quoting commentary in Science magazine: "[i]f current ill-advised regulatory levels continue to be imposed, the cost of cleaning up phantom hazards will be in the hundreds of billions of dollars with minimal benefits to human health. In the meantime, real hazards are not receiving adequate attention").

184. *See id.* at G3, col. 3 (quoting former EPA Administrator William D. Ruckelshaus). Ruckelshaus stated that "risk assessment must be based on scientific evidence and scientific consensus only. Nothing will erode public confidence faster than the suspicion that policy considerations have been allowed to influence the assessment of risk." *Id.*